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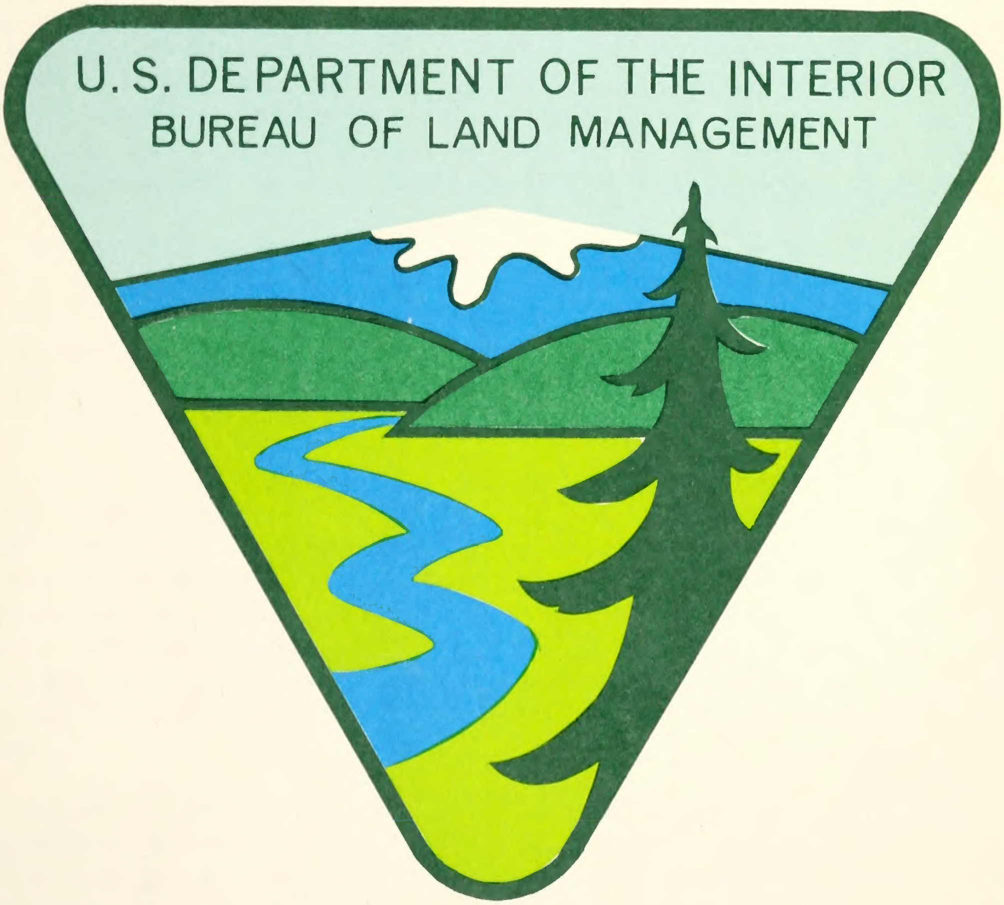
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Helena Res.

January 15, 1970

Mr. Robert J. Pafford, Jr.
Regional Director
Bureau of Reclamation, Region 2
2800 Cottage Way
Sacramento, California 95825

Dear Mr. Pafford:

Enclosed for your consideration are ten copies of our preliminary impact report for the proposed Helena Reservoir, Lower Trinity River Division, North Coast Project, California. We would like your comments by March 30, 1970, if possible. Copies of this report have been sent to other interested Federal and State agencies as shown herein. We have requested their comments by the same date. Our final impact report will follow receipt of all agencies comments.

The proposed Helena Dam and Reservoir lies within BLM's Trinity Planning Unit, Central Resource Area under the administrative jurisdiction of our Redding District Office. The bulk of the Bureau of Land Management lands within the proposed project area were classified for retention in Federal ownership on December 24, 1968, under the Classification and Multiple Use Act of September 19, 1964, (P.L. 88-607).

In the State of California, BLM has exclusive jurisdiction over approximately 16 million acres. These lands and resources are managed for multiple purposes including watershed protection, outdoor recreation, fish and wildlife habitat, wilderness protection, timber production, livestock forage, minerals production and environmental quality control. BLM also provides support functions for these lands including fire protection and rehabilitation, cadastral survey, road and trail construction and maintenance, as well as land title, lease and record services.

The process of developing data for the impact report has led us to consideration of BLM's resources and management programs in the proposed project area both without and with the project. This approach leaves less room for omission of project related impacts and it negates the possibilities of duplicating those impacts when summarized.

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Alfred Wilkins, Atty, Trinity River Assc., Weaverville	(1)

On the basis of our analysis of the BLM lands and resources connected with the proposed project, a negative impact of $75 million on these lands, resources and programs would be realized. Therefore, BLM would presently recommend against the project. We realize, however, that other considerations beyond these public lands and resources will be made in determining the feasibility of the proposed project and could indicate that the project should be constructed. Consequently, BLM has prepared alternate resource management plans that include recreation for the proposed project area.

BLM administers the largest acreage of land within the project boundary and also has major management responsibilities within the peripheral area. If the Bureau of Outdoor Recreation recommends Federal administration of recreation features of the project, BLM is prepared to expand its present programs and accept the added recreation responsibility. Further, BLM is prepared to assume the full land and resource management responsibility for all ot the public domain and acquired lands within the proposed project area not occupied by the dam, reservoir, and other facilities directly related to water storage and power production features of the project. To properly carry out our mutual responsibilities, an operating agreement between the Bureau of Reclamation and Bureau of Land Management would be necessary.

Important recommendations developed as a result of the effects of the proposed Helena Dam and Reservoir project on BLM lands, resources and programs are contained in the Summary Conclusions and Recommendations Section of the Impact Report.

Sincerely,

J R Penny

J. R. Penny
State Director

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PROJECT

Helena Reservoir

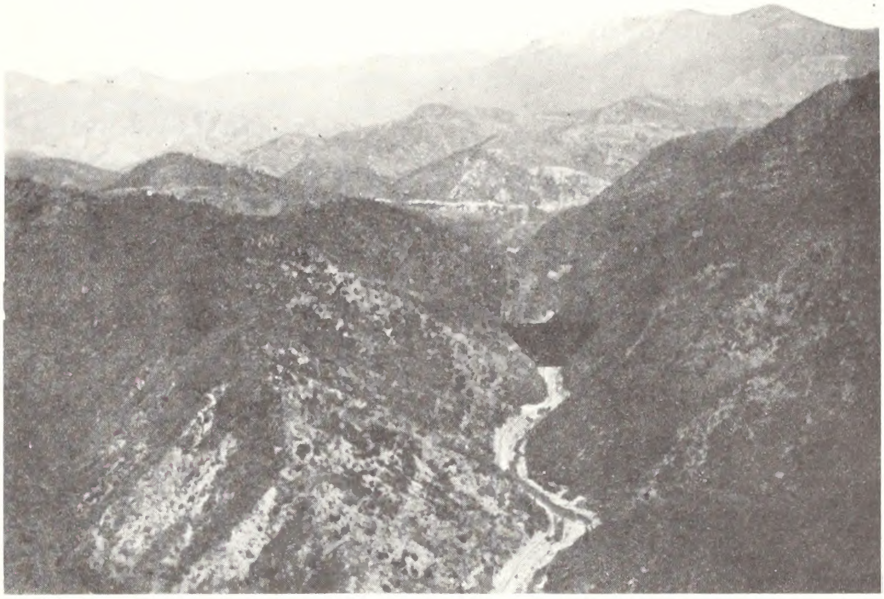
Bureau of Reclamation, Department of the Interior

A Preliminary Impact Study Report
for the Proposed
Helena Reservoir
Lower Trinity River Division
North Coast Project, California

BUREAU OF LAND MANAGEMENT

California State Office, Redding District
Central Resource Area

January 1970



Looking up Trinity River over Helena Damsite. Typically rugged mountains in the proposed dam and reservoir area. Brock Gulch area and road are in the middle distance.

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I. INTRODUCTION

The purpose of this report is to show the impact that construction of the proposed Helena Dam and Reservoir would have on the resources, programs and lands administered by the Bureau of Land Management and how these impacts would effect the proposed project. This report also presents BLM's views on the proposed project and makes management recommendations designed to minimize the adverse effects on BLM land if the project is constructed.

A. BLM Authority and Responsibilities

Management of public lands adminisered by the Bureau of Land Management is in accordance with the various public land laws, including the Classification & Multiple Use Act of September 19, 1964 (P.L. 88-607), 78 Stat. 986; O&C Act of August 28, 1937, 50 Stat. 874; Taylor Grazing Act of June 28, 1934, 48 Stat. 1269 as amended; and the Federal Water Project Recreation Act of July 9, 1965 (P.L. 89-72). Section 1c, of the Federal Water Project Recreation Act, provides for BLM management of recreation on Federal water projects where such lands are classified for retention in Federal ownership. Authority for BLM management of recreational resources on Federal water projects is clarified and confirmed in a decision from the Associate Solicitor of the Department of the Interior, dated June 7, 1968. Under these laws, BLM is responsible for management of the total resources of the land, including watershed protection, outdoor recreation,

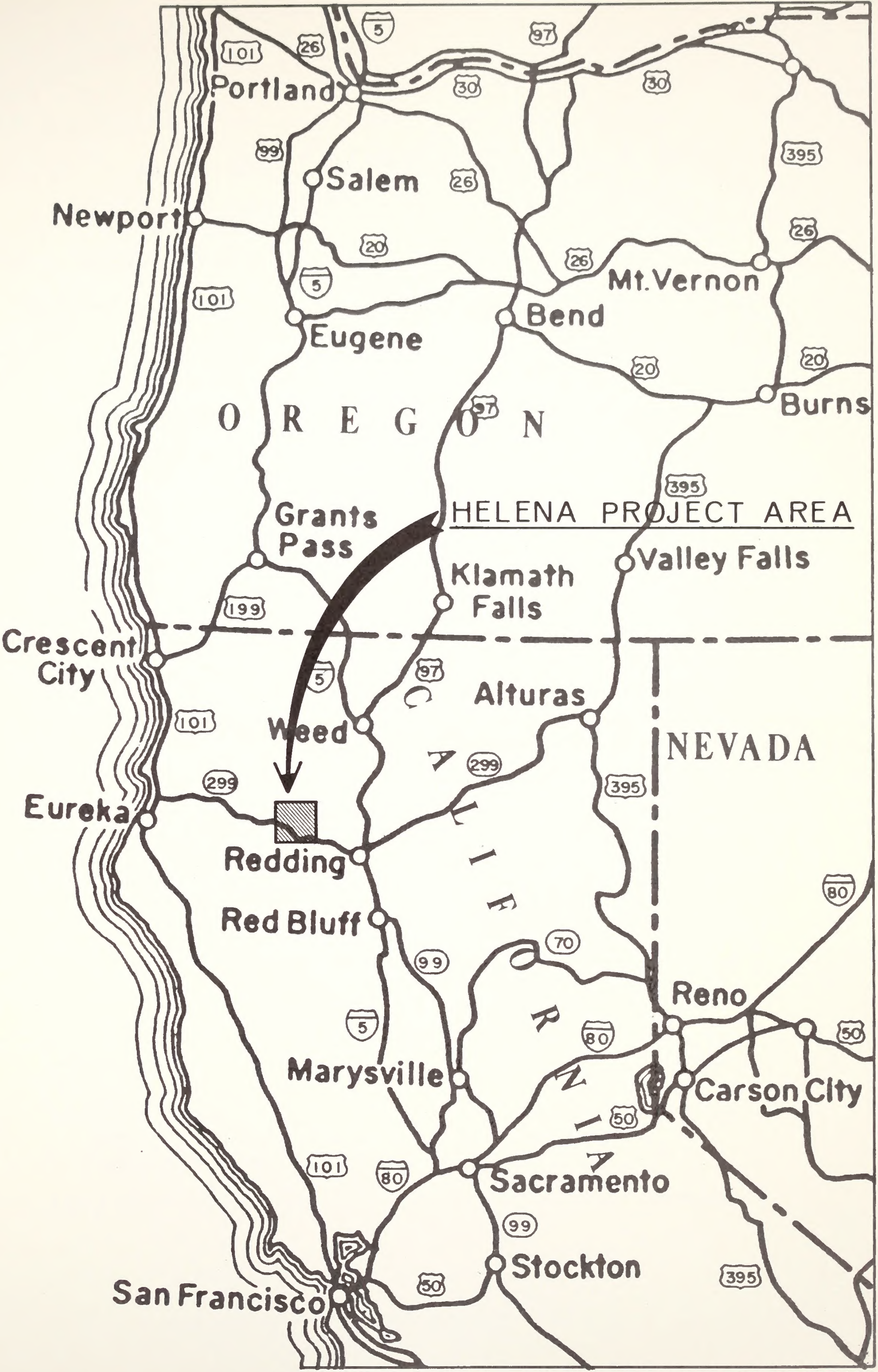
fish and wildlife habitat, wilderness preservation, scenic and aesthetic values, timber production, minerals production, occupancy and urban expansion, and the preservation of public values that would be lost if the land passed from Federal ownership.

B. Location of the Project

The proposed project is located in Trinity County, California, 250 miles north of San Francisco and 40 miles west of Redding. The proposed project area is reached by traveling Interstate 5 to Redding then turning west on California State Highway 299W. Illustration No. 1 shows the general location of the proposed project.

C. Project Description

The proposed dam and reservoir are key features in the Bureau of Reclamation Lower Trinity River Division - North Coast Project. The 550 foot, or higher, concrete arch dam would be built on the Trinity River three miles downstream from the confluence of the North Fork and the main stem Trinity Rivers. The reservoir is planned as a multi-purpose project including hydroelectric power, flood control, recreation and primarily the conservation of water for export to the Central Valley. When filled, an impoundment of 2,800,000 acre feet of water would cover a surface area of 15,700 acres, and create a 165 mile shoreline at an elevation of 1836 feet above sea level. Top of the inactive pool would be



LOCATION MAP

ILLUSTRATION I

1650 feet above sea level with a dead storage volume of 800,000 acre feet of water. Surplus water would be transferred to the Central Valley via a 14.3 mile concrete lined tunnel, 18.5 feet in diameter, which would carry a maximum of 3,000 c.f.s. Water from future downstream developments of the Lower Trinity River Division - North Coast Project would be pumped into Helena Reservoir and transferred to the Central Valley via the before mentioned tunnel. The estimated annual water yield of 840,000 acre feet would result in an annual average drawdown of 40 feet. During the period from June 1 to September 30 an average drawdown could be much more severe during both the summer months and the balance of the year because the primary purpose of the proposed project is the export of water.

RESERVOIR DATA

Height of Dam	550'
Maximum Pool Elevation	1836'
Minimum Pool Elevation	1650'
Maximum Drawdown - (vertical distance)	186'
Drawdown to end of Recreation Season (average annual)	34' vertical
Fill to minimum pool (dead storage 800,000 acre feet)	3 years
Begin export	3 years
Estimated water yield (with Eltapon & Schneiders Bar Dams in operation)	840,000 acre feet
Flood Control Reservation	Incidental

Fill to Maximum Elevation (storage 2,800,000 acre feet)		10 years
Reservoir shoreline		165 miles
Helena Dam and Reservoir (estimated cost)	$112,000,000	
Helena Tunnel	$ 90,000,000	
Helena Pumping Plant	$ 19,000,000	
Highway 299 road relocation around reservoir	$ 82,000,000	
Relocation of State Route No. 3	$ 13,000,000	

D. Climate

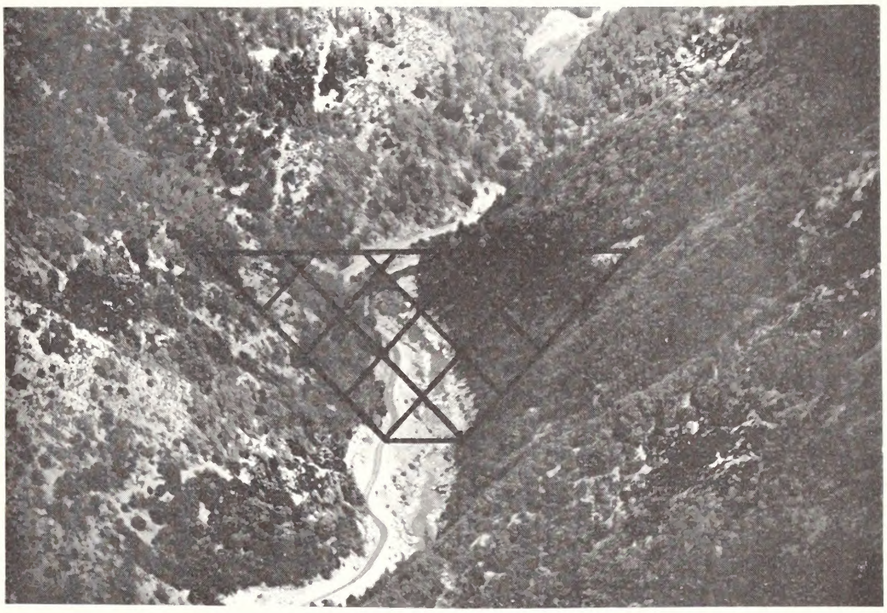
The climate in the proposed project area is characterized by warm, dry summers (90° F) and cool, moist winters (30° F). Average temperature extremes range from 10° F to 101° F, but the average annual temperature is a moderate 53° F.

Precipitation averages 36 inches annually and falls mostly from October through April. The moisture falls in the form of rain at the lower elevations but snow is common above 2,000 feet elevation.

E. Vegetation

Vegetation on the BLM lands consists of the following types:

47%	Commercial Forest (Douglas-fir, ponderosa pine, sugar pine, white fir, and incense-cedar)
26%	Oak Grass
8%	Non-commercial forest (Digger Pine)
19%	Chaparral (composed chiefly of manzanita and ceanothus)



A closeup of the proposed Helena Damsite

A large variety of shrub and tree species are interspersed among the above types, including poison oak, alder, madrone and willows.

F. Impact Area

The impact of the proposed reservoir affects far more than the lands within the proposed project boundary. In actuality, the impact area extends as far as the eye could see from any point of the proposed reservoir and beyond. This rationale also applies to all roads in the project area. The visibility map included in the Appendix shows the distances from points on the proposed reservoir (see Map No. 1).

If management practices are not properly planned and carried out in the impact area they could have adverse affects upon the project, as well as damage the aesthetics as shown in the following table. The observer sees more detail in the foreground than in either the middleground or background. For example, activities such as timber harvest would have to be modified to protect the aesthetics of the water project in the fore and middleground areas.

Zones	Near Boundary	Far Boundary 1/
	miles	
Foreground	0	¼ - ½
Middleground	¼ - ½	3 - 5
Background	3 - 5	infinity

Other BLM land within the watershed, but outside the view area, would also be affected by the proposed project. Some of these

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1/ Source: Forest Landscape Description and Inventories - A Basis for Land Planning and Design, U.S. Forest Service, 1968.

lands may be suitable for mitigative purposes, for land exchanges, or other uses.

II. Effects of Proposed Project on BLM Lands, Resources and Programs

A. Lands

1. Without the Project

a. Classification

BLM administered lands totaling 43,508 acres within the Trinity Planning Unit (impact area) were classified for retention in Federal ownership on December 24, 1968, under the 1964 Classification & Multiple Use Act. The classification action segregates the lands from appropriation under the agricultural land laws (43 U.S.C., Chapters 7 and 9; 25 U.S.C. Section 334) and from public sale under Section 2455 of the Revised Statutes (43 U.S.C., Chapter 2). Certain lands totaling 2,730 acres were also segregated from appropriation under the mining laws (U.S.C., Chapter 2) to protect their high recreational values. Other high value recreation lands will be segregated from appropriation under the mining laws when such protection is warranted. BLM land near Weaverville and Hayfork, and other small isolated tracts totaling 5,292 acres require further study before being classified for either retention in Federal ownership or disposal. These lands may be needed for expansion of the community of Weaverville or for exchange to consolidate BLM lands elsewhere to facilitate management in the Trinity Planning Unit. Map No. 2 in the Appendix shows all of the public lands administered by BLM's Redding District in the Trinity Planning Unit.

b. Other Existing Restrictions

There are 16 withdrawals covering 6,460 acres of BLM land in the Trinity Planning Unit including lands which have been restored from withdrawals subject to Section 24 of the Federal Power Act of June 10, 1920. Additional recreation withdrawals will be required as construction of facilities progresses. Four special land use permits have been issued on lands within the Trinity Planning Unit. The permits were issued for domestic access (2), slide disposal sites (1), and a target range (1). These permits are reviewed at least every 5 years to keep them current. Numerous rights-of-ways have been issued for roads, powerlines, telephone lines, pipelines, and sewer lines. Special stipulations are used to protect scenic, aesthetic, and physical values of the area.

Most of the Trinity Planning Unit is zoned in either the "U" (unclassified) zone or the "A-F" (agriculture - forestry) zone. The "U" zone is a broad classification which allows all uses not otherwise prohibited by law. The "A-F" zone allows forest production and harvest. This includes the manufacture of forest products and other uses incidental thereto. A small area along the Trinity River east of Grass Valley Creek is zoned as agriculture which allows all agricultural uses and

certain public and quasi-public uses. Much of the area in and near Weaverville has been zoned for residential, commercial, or industrial uses. The BLM lands not yet classified near Weaverville are zoned by Trinity County for residential, commercial, or industrial uses which would become effective if the lands are transferred to private ownership.

There are one confirmed and 43 suspected occupancy trespasses in the Trinity Planning Unit. An orderly program is underway to solve the occupancy problem.

A thorough study will be made of the lands not yet classified to determine the best use for these lands; be it public sale, land exchange, or continued federal management under multiple use principles.

2. With the Project

a. BLM Lands

The Bureau of Reclamation has indicated a proposed withdrawal of 17,020 acres in connection with the proposed Helena Reservoir. These lands are presently administered by BLM.

In accordance with Department of Interior Manual, Part 603.1.3 and 751 DM 1.4 any withdrawal request could be limited to those lands below the maximum flowage line (top of surcharge pool) of the reservoir. Lands requested for withdrawal below a selected freeboard could be limited

to those necessary to safeguard against adverse effects of saturation, wave action and bank erosion. Further, the withdrawal could also be restricted to those required for damsite and operation and maintenance of the project. As to those lands needed for public access and correlative purposes including outdoor recreation, fish and wildlife, and other multiple uses it is BLM's view that a classification under the Classification and Multiple Use Act of 1964 would adequately protect the use and public interests in the lands. Under a classification certain lands shown on Map No.3 could be segregated from appropriation under the mining laws, (30 U.S.C., Chapter 2) for environmental protection.

To facilitate the management of the withdrawn and classified lands in the project a memorandum of understanding between BLM and the Bureau of Reclamation is essential.

The following tabulation shows the BLM acreage that is impacted by the project:

BLM Land Affected by the Project

Total Inundated	5,020 acres
Proposed Segregation from Appropriation under the mining laws	8,580 acres
Other Land Within View Area	11,400 acres
Peripheral Land Outside the View Area	23,800 acres
Total Land Affected (Impact Area)	48,800 acres

All of the BLM lands within the Trinity River watershed and those near the town of Hayfork would also be affected by the project. The view area is especially critical because of scenic and aesthetic considerations.

(1) Other Existing Restrictions

Two special land use permits have been issued on lands that would be inundated or protected from mining. One permit has been issued to the State Highway Department for a slide disposal site and one permit has been issued to the Trinity County Sheriff's Department for a target range. Both permits would be terminated with development of the project.

About 4,920 acres of the BLM administered lands that would be inundated or segregated from appropriation under the mining laws are presently covered by 16 withdrawals. A majority of the rights-of-ways now in effect in the Trinity Planning Unit are located on lands that would be inundated or segregated from mining. These rights-of-ways would be partially or entirely terminated and new rights-of-ways issued, if needed, with restrictions to minimize conflicts with the project and natural beauty of the area. Termination of one life estate and four small tract leases would be necessary due to the project. Two garbage dump sites leased to Trinity County under the Public Purposes Act would be inundated.

(2) Changes in Land Use

Map No. 4 shows current land use in the proposed project area. Lands within the view area of the reservoir and major roads (Map No. 1) would require special management decisions to protect the aesthetic and scenic values of the area. Resource uses which conflict with the project and overall recreational aspects of the area would be managed to eliminate or minimize the conflicts. The proposed reservoir would displace many people from the Trinity River Valley. Possible expansion of Weaverville and Hayfork would then exert pressures for the sale of nearby BLM lands that have not been classified under the Classification and Multiple Use Act of 1964.

b. Other Lands

The State of California owns 280 acres and the Trinity National Forest has 9,520 acres that would either be inundated or needed for environmental protection. Approximately one mile of the proposed reservoir would extend into the Shasta-Trinity-Whiskeytown National Recreation Area - Trinity Unit.

c. Lands to be Acquired

Acquisition of private lands would include those to be inundated or needed for environmental protection, recreation, and wildlife purposes. Since these lands would be purchased in "fee simple", it is BLM's opinion that lands

surplus to actual operations of the proposed reservoir should be managed for their multiple resources along with the adjoining BLM lands. Management of the acquired lands could be arranged by execution of a memorandum of understanding between the State Director, Bureau of Land Management, and Regional Director, Bureau of Reclamation. The Bureau of Reclamation would retain rights necessary for operation of the reservoir and BLM would receive the rights necessary for multiple use management not conflicting with reservoir operations.

B. Forest Management

1. Without the Project

Current inventory information indicates that the BLM Trinity Planning Unit has 23,000 acres of commercial forest land which support 231 million board feet of growing stock. This forest is found on all types of terrain where slopes vary from 20% to 90% and volumes range from 1 to 50 thousand board feet per acre. The timber is generally multi-stored consisting of Douglas-fir, ponderosa pine and sugar pine. Small volumes of white fir and incense-cedar are also found. Past cutting practice has been to harvest the over-mature, stagnated and diseased trees. Some sales include other than high-risk trees in order to set up economic logging units. Timber found in developed and undeveloped recreation sites is normally left undisturbed unless it constitutes a potential hazard to the visitor.

The sustained allowable annual cut for the Trinity Planning Unit is 6.5 million board feet. Based on the 1969 average price of $51 per thousand board feet, the 6.5 million feet has an average annual value of $331,500.

Timber cut from BLM lands in the Trinity Planning Unit provides about 15% of the volume processed by the sawmill in Weaverville. This amounts to a generated value of approximately 2.6 million dollars to the Trinity County economy as shown in the following table.

TABLE 1

Local Economy Impact from Timber Harvest

$1.00	Stumpage value
1.55	Harvest for each $1 of stumpage
3.85	Primary manufacture
1.50	Transportation and marketing
$7.90	

(7.90) ($331,500) = $2,618,850 or $2.6 million

The acreages listed below are identified as needing the corresponding forest development practices to approach maximum site utilization for maximum economic output.

FOREST DEVELOPMENT

Treatment	Acreage
Commercial Thinning	585
Pre-commercial Thinning	580
Planting (non-stocked)	125
Interplanting	855
Total acres to be treated	2,145

The present average growth rate of 112 board feet per acre reflects our current situation of over-mature and understocked stands. This growth figure has the potential of being increased 3.6 times to 402 board feet per acre (Scribner). A 90% of normal stand production, or 362 board feet per acre is believed attainable.

Looking west at BLM timberlands in the Brock Gulch area. Parts of the Brock Gulch access road are also shown.

2. With the Project

a. BLM Lands

Approximately 2,000 acres of BLM commercial forest lands supporting 20,900 M board feet of timber would be inundated by the reservoir. An additional 2,100 forested acres supporting 22,500 M board feet of timber are located in the foreground (within 1/4 mile) of the reservoir and would be subject to light timber harvest. An estimated 70% or 15,750 M board feet would not be available for harvesting in order to protect the reservoir environment. The 6,600 acres of BLM forest lands in the middleground (1/4 mile to 4 miles from the reservoir) support 66,000 M board feet of timber. About 40% of this timber amounting to 26,400 M board feet will not be available for harvesting due to topographic and aesthetic considerations. Growth of forest products amounting to 2,211,800 board feet annually will be lost on 6,110 acres of BLM lands which are either flooded or within the foreground and middleground area. At current average stumpage values, BLM's average annual revenue loss would approximate $112,800. All of the timber within the watershed above the proposed project would require special harvesting methods and remedial land treatment practices after cutting to minimize sediment movement and aesthetic disruptions. The harvesting methods would include various cable logging techniques,

lighter and more frequent selective cuts, and the leaving of buffer zones to protect the physical and aesthetic attributes of the area. Land treatment practices of replacing the ground cover with grass or trees and water-barring skid trails and temporary roads would be employed within the watershed with a greater intensity than normally applied. The special timber harvesting techniques and land treatment practices would increase logging costs an estimated $14 per thousand board feet on 4,590 acres in the middleground and foreground areas. The increased cost would be applied to an annual growth of 1,662,000 board feet of timber. Hauling costs for timber harvests in the impact area would be reduced approximately $1 per MBF due to new roads having improved alignment and less adverse grade than existing roads. Table 2 summarizes the BLM timber volume lost caused by the proposed project.

TABLE 2

BLM Annual Timber Production Loss Caused
By Proposed Project Development

Affects	Acres	Growth/acre bd.ft.	Volume Loss/bd.ft.
Inundated	2,000	362	724,000
Preserved in Foreground	1,470	362	532,140
Preserved in Middleground	2,640	362	955,680
Total	6,110		2,211,820

b. Lands to be Acquired

The timber lands acquired for environmental protection of the reservoir should be managed with the BLM lands. Presently, there is no estimate of standing timber available on which to project additional management responsibilities. The timber on the acquired lands above the 1836 foot elevation should be purchased as standing timber to protect scenic and environmental qualities so vital to the reservoir area.

C. Recreation

The BLM Trinity Recreation Management Area is synonymous with the impact area. Approximately 100,000 people reside within a 50-mile radius of this area. The 50 - 250 mile zone contains 7 million people, and includes the Sacramento Valley, San Francisco Bay area, and southwestern Oregon, which are accessible within 5 - 6 hours driving time. Recreation use has continued to increase with population growth. California's population approximated 20 million people in 1969, and is expected to reach 26.5 million by 1980.

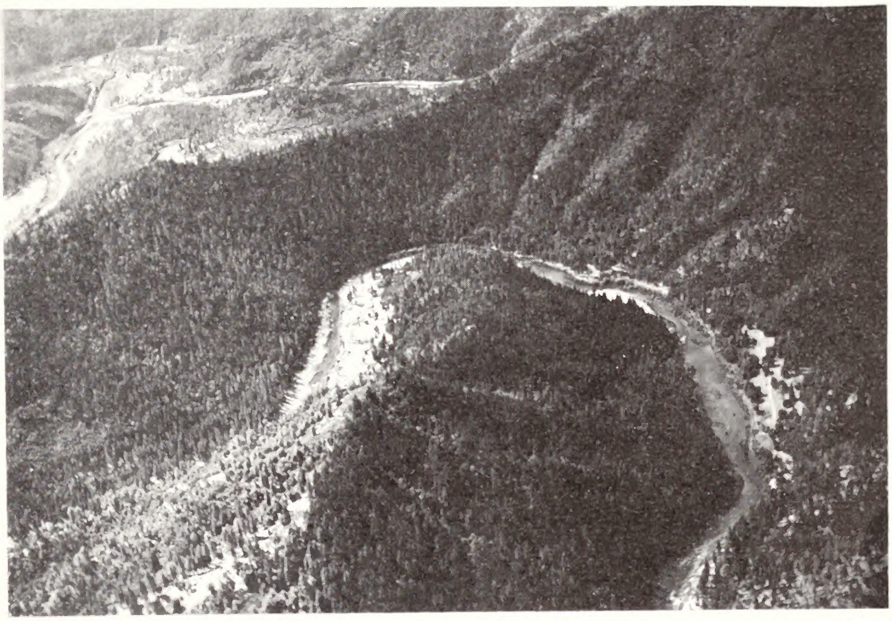
Recreation use standards as used in this report are set forth in Senate Document 97, and Supplement No. 1, and include:

(1.) "Recreation Day" - a standard unit of use consisting of a visit by one individual to a recreation development or area for recreation purposes during any reasonable portion or all of a 24-hour period.

(2.) Capacity of camp and picnic areas - calculated on the basis of four persons per family unit. Spacing between campground units should be 105 to 120 feet along centerline, with 4 units per acre. Picnic grounds should be planned on the basis of 8 family units per acre, with a planned average use of 1.5 times per unit per day.

1. Without the Project

The Bureau of Land Management administers approximately 48,800 acres in the Trinity Recreation Management Area.



A view of the winding Trinity River Valley. The undeveloped Steel Bridge Recreation Site is on the right and the programmed Union Hill Recreation Site is just over the timbered ridge, upper left. Douglas City townsite is located in the upper left. Both recreation sites and Douglas City townsite would be flooded by the proposed project.

Due to the unique location of these lands they are most important for the recreationist desiring a place to camp, picnic, fish or hunt. The BLM lands control the access and shoreline for an important portion of the salmon and steelhead spawning ground in the Trinity River and also provide a large share of the key winter range for the Trinity deer herd. BLM has two developed campgrounds within the Trinity Recreation Management Area. These are the Douglas City and Junction City Campgrounds, with a total of 53 camp and picnic units. During calendar year 1968 these two campgrounds received 28,500 recreation days of use. The facilities are also used during the fall and early winter months by hunters and salmon and steelhead fishermen.

Demand for outdoor recreation facilities is continuing to increase. The California Outdoor Recreation Plan forecasts a demand of 1,240,000 recreation days in Trinity County by 1980. By the year 2000, this use is expected to be in excess of 2.3 million recreation days. BLM has inventoried nineteen recreation sites in the Recreation Management Area in addition to the two developed sites (see Map No. 5). Even though undeveloped, some of the sites are experiencing moderate to heavy recreation use. All the undeveloped sites are programmed for future development along with expansion of the developed facilities at the Douglas City and Junction City sites. When completed, a total of 583 camping and picnic units will provide for

Group picnic use at the Douglas City Recreation Site is shown above.

The picture below shows overnight camping use at Douglas City Recreation Site. The proposed reservoir would inundate the site.

273,400 recreation days of use exclusive of fishing and hunting. Using Senate Document 97, Supplement No. 1 values and the breakdown of uses experienced at the developed sites, an annual value of $247,850 is established. Under the Wild and Scenic Rivers Act, P.L. 90-542, the Trinity River meets the criteria for consideration as a Recreation River. The objectives of management for a Recreation River Area are to provide a wide range of public outdoor recreation opportunities on a river in its free-flowing condition. As provided by the Act, BLM has responsibility for analysis and recommendation to the Bureau of Outdoor Recreation whether or not the Trinity River be submitted to the Congress for approval as a river with subsequent Recreation River Classification.

Such classification would enhance the BLM Recreation program in this area through attracting additional recreationists to the Trinity County area.

2. With the Project

Construction of the proposed Helena Dam and Reservoir would flood BLM's Douglas City and Junction City recreation sites. It would also inundate twelve (12) of the nineteen (19) inventoried sites which are programmed for future development. The planned 12 mile hiking and riding trail between the Douglas City and Junction City campgrounds would also be lost.

The Trinity River about 1½ miles west of Lewiston showing the typical free flowing river environment.

For the purpose of this report, replacement costs can only be presented for the two existing recreation sites. However, BLM has the responsibility to continue to program construction of facilities to meet outdoor recreation demands on BLM lands. Should the proposed dam and reservoir be authorized and constructed, BLM would expect replacement of any lost facilities.

Table 3 lists the existing facilities and the estimated replacement costs, using 1969 cost figures as a base.

TABLE 3

Estimated Replacement Cost of Developed Facilities

Facilities	Units	Costs ($)[1/]
Camp units	43	129,000
Picnic units	8	21,600
Group picnic units	1	8,000
Totals		158,600
Survey & Design and Engineering +25% surcharge		39,600
TOTAL COSTS		198,200

[1/] Including table, grading, grate, garbage cans and stand, parking space, and pro rata share of secondary circulating roads, sanitary facilities, water system, trails, walks, barriers and sign.

Two views of the Junction City Recreation Site from the South. This site would be inundated by the proposed Helena Reservoir.

Loss of BLM's developed recreation sites will result in a loss of recreation days which are evaluated in accordance with Supplement #1, Senate Document 97 in the following Table.

TABLE 4

Recreation Day Loss and Value

Activity	Annual Days Use	Value Per Day	Annual Value
Camping	21,350	$1.00	$21,350
Picnicking	5,200	0.50	2,600
Water Sports	1,250	1.00	1,250
Total	27,800		$25,250

The loss of recreation days have a far greater impact on the economy of Trinity County considering actual expenditures by overnight tourists of $10/day and day users of $4/day as shown in the Recreation Section of the Trinity County General Plan. Recreation use is presently increasing faster than population growth. BLM's recreation visitor use potential in the year 1990 without the project is calculated at 274,000 recreation days using present population projections and current use figures. Projected recreation use in the year 2025 is expected to reach 900,000 recreation days.

The Bureau of Outdoor Recreation report, when completed, will show benefits and cost for the entire project, recognizing the present and projected outdoor recreation use without the project. Hunting and fishing use will be evaluated in the Bureau of Sport Fisheries and Wildlife report.

Viewing the Union Hill pond within the programmed Union Hill Recreation Site. Water from the proposed reservoir would cover the pond and lower portions of this site.

Preliminary recreation visitor day estimates with project development by Bureau of Outdoor Recreation are as follows: These estimates are based on the location of the reservoir in relation to population, recreation visitor use experience at comparative reservoirs, the quantity and quality of reservoir recreation available in the area, and resource limitations.

TABLE 5

Project Visitor Use - Helena Reservoir

Year	Expected Attendance Recreation Days
1990	100,000
2005	600,000
2030	1,066,000

The total present and projected outdoor recreation use in the proposed project area should be deducted from the estimated use with the proposed reservoir in corresponding years to determine the net effect on recreation use and values with the reservoir.

BLM has identified 41 potential recreation development sites within the proposed project area as shown on map 6 . Of these, 19 are totally or partially on BLM lands. These 41 sites contain 767 acres which could be developed for intensive recreation use. In these 41 sites BLM administers approximately 236 acres and 496 acres are private lands that would need to be acquired.

Five sites shown in the following table should be initially developed as a project cost. These sites are also shown by site number on Map No. 6 , in the appendix. All of these sites are located along the proposed shoreline where the slope, presence of natural cover and easy access make them suitable for initial development. These sites could accommodate an estimated 170,280 annual recreation days. Boat launching sites should be developed prior to filling to allow access at minimum pool level.

TABLE 6

Proposed Initial Recreation Development

Helena Reservoir

General Area	Site No. (map)	Camping ac.	Camping Unit	Picnicking ac.	Picnicking Unit	Beach & Parking (Acres)	Boat Launch & Parking (Acres)
Union Hill	16	15	60	1	8		2
Oregon Gulch	34,35	5	20	1	8	1	2
Rush Creek	1,2	5	20				
Blanchard Flat	21	5	20				
Poker Bar	12	5	20	1	8		1
		35	140	3	24	1	5

To date there has been no expression of interest in the development or management of the recreation resources at the proposed reservoir by either Trinity County or the State of California.

Timbered area near Poker Bar recommended for initial recreation development.

In accordance with Sec. 1 (c) of the Federal Water Project Recreation Act, P.L. 89-72, BLM is capable of and willing to assume management of the recreation development, if federal agency management is determined to be appropriate.

D. Wildlife Resources

High wildlife values are involved in the proposed project area and on the affected BLM lands. The Bureau of Sport Fisheries and Wildlife report on the proposed Helena project has not yet been completed. Therefore, this section includes basic data on the total project area, and relates it to BLM lands. The information was developed by an interagency committee comprised of biologists from the Bureau of Land Management, Bureau of Sport Fisheries and Wildlife, Forest Service, California Department of Fish and Game, and California Department of Water Resources.

1. Without the Project

a. Wildlife Resource Analysis

(1) Mule Deer (Blacktailed)

The Weaverville herd unit is the major migratory deer herd affected by the proposed project. Habitat for the herd includes 465,000 acres of summer range, 110,000 acres of winter range, and 66,000 acres of key winter range. The project area supports about 1,900,000 deer days use per year. On the key winter range use varied from 150 - 3000 deer days per acre in 1967-68. During the 30-60 day period of deepest snows deer are forced into ultra concentration areas consisting of 2,100 acres. Other habitat areas are covered by deep snow and forage is unavailable (see Map 7). Survival of the herd is dependent on the

2,100 acres of critical winter range. Table 7 shows BLM and total habitat acreages.

TABLE 7

Deer Range	Total Acres	BLM Acres	(%)
Summer Range	466,000	22,000	(5)
General Winter Range	110,000	17,000	(15)
Key Winter Range	66,000	18,000	(27)
Critical Winter Range	2,100	1,400	(67)

An average of 37,000 hunter days are spent annually in harvesting 900 deer from the Weaverville herd. The hunter days are valued at $222,000. About $149,000 is attributable to BLM lands based on critical winter range.

(2) Black Bear

Trinity County is one of the top three counties in California in annual bear harvest. An estimated 800-1200 black bear frequent the proposed project area. Approximately 1,650 hunter days valued at $9,900 are spent each year to harvest 10 bear from BLM lands. This is 40 percent of the total in the project area.

(3) Mountain Lion, Bobcat

These animals are found throughout the proposed project area. An estimated 800 hunter days valued at

$4,800 is attributable to BLM lands each year. This is 50 percent of the total.

(4) Coyote

Found throughout the area, the population varies with availability of prey species. About 200 hunter days valued at $800 or 40 percent of the total, is attributed to BLM lands in the proposed project area.

(5) Furbearers (Marten, Fisher, Mink, River Otter, Skunk, Ringtailed Cat, Grey Fox

These animals are rare to common in the proposed project area. Two hundred hunter days valued at $600 is attributed to BLM lands, which is 40 percent of the total.

(6) Grey Squirrel

This species is relatively common where mast is found. An estimated 600 hunter days valued at $3,000 is attributable to BLM lands each year. This is about 46 percent of the total.

(7) Upland Game and Waterfowl (Bandtailed Pigeons, Blue Grouse, Mourning Doves, Rabbit and Hare, Valley and Mountain Quail and Waterfowl

An estimated 1000 hunter days or 50 percent of the total are spent annually harvesting bandtailed pigeons, blue grouse, dove, rabbit and hare, quail and waterfowl on BLM lands. These hunter days have an annual value of $5000. Bandtails and quail receive the most presssure.

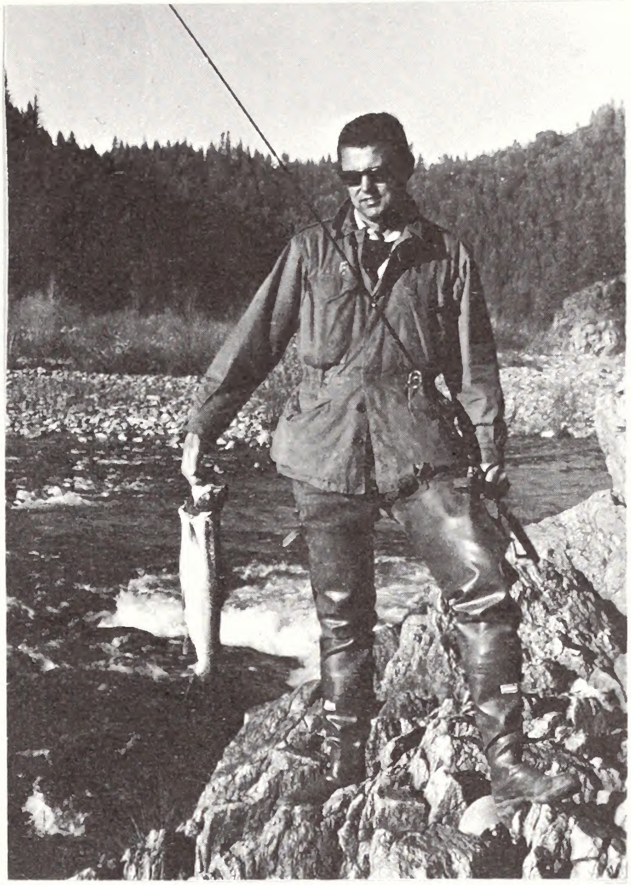
(8) Non-Consumptive Wildlife Uses

These activities include photography, general observation, education trips and lectures and research. An estimated 31,320 visitor days valued at $46,980 is attributable to BLM lands.

(9) Anadromous and Resident Salmonid Fisheries

The anadromous and resident Salmonid populations are dependent on various aquatic habitats to supply the environmental needs during their complex life cycles. Quality spawning gravels, riffles for food production, rearing ponds, proper water quality, adequate water quantity and correct water temperatures are part of the biological needs of salmon, steelhead, and trout during some part or all of a given year.

The Trinity River is the most productive major tributary system of the Klamath River fisheries. The anadromous fish runs in the Trinity River above the proposed Helena Dam site approximates 105,000 Chinook and Coho Salmon and steelhead. The fish runs generate an inland sport fishery of about 229,000 fisherman days, and ocean sport fishing of approximately 125,000 fisherman days. It also contributes about 1,065,000 pounds to the ocean commercial fishery. This amounts to 67 percent of the total for the entire Trinity River system.



An example of the excellent fishing
opportunities on the Trinity River
at BLM's Douglas City Recreation Site

. Projected Wildlife Resource Potential

Values presented represent those which would result from continuation of the present management level. However, more intensive management that will develop because of human needs will result in increased wildlife production.

In the case of deer, 20 percent or 3,600 deer could be harvested rather than the present estimated five percent or 900 deer. This would boost hunter success from the present 17 percent to 50 percent with about the same number of hunter days. However, about 1,900 more hunters would be able to participate. Greater recreational satisfaction would result for more hunters. It also would allow a larger total deer herd during the summer, increasing aesthetic values, while reducing the deer population on the winter range. The present deer days use of 1.9 million could be doubled through more intensive habitat manipulation. Thus, the present 23,240 hunter days on BLM lands could be increased to an estimated 47,000 hunter days annually. However, to accomplish this, proper deer harvest must be instituted and carried out along with range rehabilitation.

Accelerated fisheries management, such as major habitat rehabilitation, improved and enlarged hatchery operations, and increased research and studies, could increase

A fine catch from the fall salmon run in the Trinity River. Many fishermen concentrate their efforts on this BLM managed section of the Trinity River during anadromous fish runs.

fisherman days and harvest about 25-35 percent above present levels. This would be about 69,000 F.D. inland sport fishing, 38,000 F.D. ocean sport fishing, and 320,000 pounds commercial harvest. They would have a total value of about $700,000 above current ones.

WILDLIFE SUMMARY (without the project)

A summary of annual wildlife use and values is presented in Table 8 Of the total value of about $2,757,000 in the project area $2,110,000 is attributable to BLM lands.

Recognizing that other factors affect the life cycle of anadromous fish, for purposes of this report the area of quality spawning gravels is used to determine the values attributable to BLM lands. Approximately 80% of the spawning gravels are managed by BLM with a corresponding portion of total fish values.

Senate Document 97 values are used except for the commercial harvest. Ocean commercial harvest values of $0.55 per pound are based on 1965 mixed fish prices developed by the Water Project Branch, California Department of Fish and Game. Current price, however, is about $0.90 per pound. The total fish and wildlife values attributed to BLM lands without the project is $2,110,042.

The actual economic contribution of wildlife is much greater considering expenditures for equipment and travel by the hunter, fisherman and tourist. However, no attempt is made to quantify these values or to determine the value added to the local economy from the wildlife resources common to the Trinity Unit.

TABLE 8

Present Annual Wildlife Resource Values for the Proposed Helena Project and the BLM-Administered Portions of the Area

Species or Activity	Hunter-Fisherman Days & Pounds of Fish		Dollar Values	
	Project Area	BLM	Project Area	BLM
Mule Deer (Blacktail)	37,058 H.D.	24,829 H.D.	$ 222,348	$ 148,974
Black Bear	4,125 H.D.	1,650 H.D.	$ 24,750	$ 9,900
Mountain Lion	1,600 H.D.	800 H.D.	$ 9,600	$ 4,800
Coyote	500 H.D.	200 H.D.	$ 2,000	$ 800
Furbearers	500 H.D.	200 H.D.	$ 1,500	$ 600
Upland Game & Waterfowl	3,300 H.D.	1,600 H.D.	$ 16,500	$ 8,000
Non-Consumptive Use	78,300 R.D.	31,320 R.D.	$ 117,450	$ 46,980
Inland Sport Fishery				
Salmon	116,780 F.D.	93,424 F.D.	$ 525,510	$ 420,408
Steelhead	111,890 F.D.	89,512 F.D.	$ 503,505	$ 402,804
Ocean Sport Fishery	124,620 F.D.	99,696 F.D.	$ 747,720	$ 598,176
Ocean Commercial	1,065,000 lbs/fish	852,000 lbs/fish	$ 585,750	$ 468,600
Subtotals	47,083 H.D.	29,279 H.D.	$ 276,698	$ 173,074
	353,290 F.D.	282,632 F.D.	$1,776,735	$1,421,588
	78,300 R.D.	31,320 R.D.	$ 117,450	$ 46,980
	1,065,000 lbs.	852,000 lbs.	$ 585,750	$ 468,600
Total			$2,756,633	$2,110,042

F.D. = Fisherman Days; H.D. = Hunter Days; R.D. = Recreation Days

2. With the Project

a. Wildlife Resources

(1) Mule Deer (Blacktailed)

Of the 2,100 acres of critical winter range, 1,550 acres are above and 550 acres are below maximum pool elevation of the proposed reservoir. See Map 7 BLM administers about 1,400 acres of the critical winter range, of which 500 acres would be inundated. An additional 1,340 acres of the critical winter range area would be adversely affected by campground development, road and trail construction, and construction of other physical facilities generated by the proposed reservoir.

The deer herd would be decimated to a degree commensurate with the loss of critical winter range areas. The surviving population would be that portion of the herd which could adjust to the drastic reduction of key winter range, and reduced amount of forage. Table 9 shows losses attributable to BLM lands approximating 22,350 hunter days valued at $134,100.

(2) Project Effects on All Other Wildlife Resources and Non-Consumptive Wildlife Values

The loss of vital sources of food supply, reproduction environment, and reduction of critical winter range would

have adverse effects on bear, mountain lion, coyote, furbearers, small game, upland game birds, passerine birds and waterfowl. The cumulative adverse effect of the proposed project on these populations would be to eliminate them from the area and initially reduce the adjacent population by about 20 percent. The estimated loss is about 2,005 hunter days valued at $10,870. The loss on BLM land is computed at 890 hunter days valued at $4,820 annually. The non-consumptive wildlife uses would be reduced proportionately to the reductions of the wildlife resources of the area. Any increased public use of the area would not result in an increased public exposure to the wildlife species. This is because of the species adversion toward humans, such as mountain lion, bear, grouse and furbearers. More importantly, the loss of key deer winter range and anadromous fishery habitat would elimate these large wildlife populations.

(3) Project Effects on Fisheries

Construction of the proposed Helena Dam and reservoir would completely eliminate the present anadromous fish run which passes the proposed dam site. The estimated annual fisheries loss is 353,290 inland and ocean sport fishing days with a value of $1,776,735. As shown in Table 9 , commercial ocean catch of 1,065,000 pounds valued at $585,750 would be lost.

TABLE 9

Estimated Wildlife Resource Losses in the Proposed Project Area and BLM's Share of the Losses

Species or Activity	Hunter-Fisherman-Visitor Days & Pounds of Fish Lost		Dollar Values Lost	
	Project Area	BLM	Project Area	BLM
Mule Deer (Blacktailed)	33,350 H.D.	22,350 H.D.	$ 200,100	$ 134,100
Black Bear	825 H.D.	330 H.D.	$ 4,950	$ 1,980
Mountain Lion	320 H.D.	160 H.D.	$ 1,920	$ 960
Coyote	100 H.D.	40 H.D.	$ 400	$ 160
Furbearers	100 H.D.	40 H.D.	$ 300	$ 120
Upland Game & Waterfowl	660 H.D.	320 H.D.	$ 3,300	$ 1,600
Non-Consumptive Use	15,600 R.D.	6,265 R.D.	$ 23,400	$ 9,400
Inland Sport Fishery	228,670 F.D.	182,936 F.D.	$1,029,015	$ 823,212
Ocean Sport Fishery	124,620 F.D.	99,696 F.D.	$ 747,720	$ 598,176
Commercial Fish Harvest	1,065,000 lbs.	852,000 lbs.	$ 585,750	$ 468,600
Subtotals	35,355 H.D.	23,240 H.D.	$ 210,970	$ 138,920
	15,600 R.D.	6,265 R.D.	$ 23,400	$ 9,400
	353,290 F.D.	282,632 F.D.	$1,776,735	$1,421,388
	1,065,000 lbs.	852,000 lbs.	$ 585,750	$ 468,600
Total			$2,596,855	$2,038,308

F.D. = Fisherman Days; H.D. = Hunter Days; R.D. = Recreation Days

b. Compensatory Measures for Fish and Wildlife Resource and Losses

The Bureau of Sport Fisheries and Wildlife has the responsibility for identifying compensatory measures for the fish and wildlife resource that will be lost as a result of the proposed project. BLM has had input into determination of these losses. BLM will continue to work with the Bureau of Sport Fisheries and Wildlife and California Department of Fish and Game in identifying wildlife mitigation areas. BLM should be the land managing agency where (1) BLM lands are involved, (2) private lands acquired or utilized for wildlife mitigation are adjacent or interspersed with BLM lands, or (3) BLM has been designated as the managing agency for other portions of the proposed project area.

Mitigation plans should (1) be sufficiently specific to permit attainment of the objectives; (2) be technically and economically feasible; (3) be within the biological capabilities of the habitat. and the wildlife species; (4) be coordinated with other land uses; and (5) be compatible with BLM policies.

Compensation or total replacement of the Weaverville deer herd key winter range is not possible within the herd range because of lack of land below the 2,000 foot level. Mitigation for about 10-15 percent of the loss is possibly feasible adjacent to the project. However off-site mitigation is the only logical approach to recapturing about 90 percent of the deer range losses.

Replacement costs will be developed by the biologists of the interagency committee and will be in the BSFW report.

BLM was assigned mitigation responsibility in connection with the Trinity Dam Project. Construction of the proposed Helena Dam and reservoir will result in inundation of portions of these mitigation areas. To date, BLM has spent about $63,000 in deer habitat improvement on 1100 acres on this project. Mitigation measures for the Helena Project should also compensate the loss of work accomplished in connection with the Trinity Dam Project.

However, BLM strongly recommends against any deer habitat mitigation work being carried out until a deer management plan is developed and working that would assure proper harvest, and properly timed in relation to habitat development.

The Helena and associated projects would eliminate anadromous fisheries on the remaining Upper Trinity, South Fork and North Fork Trinity River. No compensation or mitigation is possible. However, to maintain the limited remaining fishery in the main Trinity River below the South Fork various measures will be needed. The BSFW report will detail these.

Habitat development will be necessary to compensate for the habitat loss to other species of wildlife such as upland game birds, small game, furbearers and waterfowl. The interagency committee will help develop the estimated costs which will again appear in the BSFW report.

c. Additional Project Effects

The proposed project would create a potential reservoir fishery. The value of this fishery would be dependent upon intensity of management. However, there are extensive reservoir fisheries in the nearby areas. Of key importance is the fact that the unique and valuable anadromous fishery cannot be compensated or mitigated by the potential reservoir.

WILDLIFE SUMMARY (with the Project)

Construction of the proposed dam and reservoir could eliminate the Weaverville deer herd and seriously affect other wildlife populations. The anadromous fish run above the proposed dam site would be completely eliminated. Wildlife resource losses resulting from the proposed project are estimated at $2,596,855. As was shown in Table 9, the losses on BLM lands would amount to $2,038,308.

All of the available wildlife information has been evaluated. The present and projected wildlife resource values, without-the-project, are far more valuable than the wildlife values that would exist if the proposed Helena Project is constructed. It is evident that construction of the proposed project would be highly detrimental to the wildlife resources.

E. Watershed

1. Without the Project

The Trinity River water is of high quality; mineral content is low. The main concern of the water quality is with sediment load. The physical characteristrics of the soils in the watershed are such that suspended sediments are produced during peak flows. Of the total 48,800 acres managed by BLM in the project area, 2,080 acres are in the severe and critical erosion class.

The soils within BLM's Trinity Planning Unit are derived primarily from granitic, sedimentary or metasedimentary and metamorphic rocks. The soils derived from decomposed granite comprise approximately 8-10% of the total land area. Present erosion is moderate, but susceptibility to erosion becomes very severe when the surface is disturbed and vegetative cover is removed. These soils generally yield fine sediments. Therefore, management practices must include methods that will cause the least surface disturbance.

a. Chawanakee-Corbett Soils (SC-cf)

These soils are derived from granitic rock. They are shallow (10-15" deep) over decomposed granite, coarse sandy loam texture, excessively drained and occur on slopes ranging from 30-75%. Vegetation consists of mixed conifers, shrubs, oak, and grasses. The infiltration rate is very rapid; run-off is slow and the water holding capacity is low.

b. Josephine - Sheetiron - Maymen Soils (JSM).

These soils are derived from sedimentary and metasedimentary rocks such as shale, schists, sandstones and conglomerates. They are shallow (9-20" deep), gravelly loam texture, well drained and occur on 30-75% slopes. The subsoils for the Josephine soils are thick, moderately fine textured gravelly clay loams. The Sheetiron - Maymen soils occur on fractured bedrock. Vegetation is composed of conifers, black oak and shrubs. The infiltration rate is moderate; run-off is rapid; and permeability is moderate. Present erosion is moderate. The susceptibility to erosion is very high.

c. The Neuns Soils (ND)

These soils are derived from metamorphic volcanic rocks. They are moderately deep (20-40" deep), gravelly sandy loam texture throughout profile, well drained and occur on slopes ranging from 30-75%. Vegetation is composed of ponderosa pine, sugar pine, white fir, Douglas-fir, incense-cedar, oak and shrubs. The infiltration rate is rapid; run-off is slow; and available water holding capacity is low.

Present erosion is slight to moderate. Erosion susceptibility is high.

2. With the Project

The contribution of the BLM lands to water quality would not be greatly changed by construction of the project. Necessary precautions should be taken to maintain or improve water quality and to protect watershed values. Recommended measures are listed as follows:

a. Roads should be designed and constructed to be compatible with fragile soil conditions. Cuts and fills should be revegetated by hydromulching where an adequate stand of acceptable grasses cannot be established by broadcasting or drilling. Seeding should be accompanied by fertilization.

b. Forestry All timber management on critical erodible soils should be planned to protect watershed values.

c. Recreation Sites should be selected where there will be minimum soil disturbance.

d. Watershed Plans Watershed management plans should be completed on an interagency basis for the entire watershed. All of the additional cost cannot be identified and charged to the project; therefore it should be borne by the managing agency.

F. Livestock Forage

Grazing by domestic livestock is of minor importance in the Trinity Planning Unit. The bulk of the BLM lands that are leased for domestic livestock grazing are located in T. 32 N., R. 9 W., MDM. Losses would be insignificant.

G. Roads

1. Without the Project

The Bureau of Land Management maintains 43 miles of roads in the Trinity Planning Unit. Another 42 miles are planned and several existing roads will be widened and upgraded. Three miles of existing roads provide access and interior travel at the Douglas City and Junction City Recreation Sites. As additional recreation sites are developed more roads will be required.

2. With the Project

The proposed reservoir would inundate much of the present State, County and BLM road network in the Trinity Planning Unit. The required replacement roads would provide access into the area for public use and management of resources around the reservoir. The Bureau of Reclamation has proposed the following roads as project features:

a. Highway 299W bridging the reservoir east of Union Hill and tying into the present road south of Weaverville.

b. Highway 299W from Oregon Mountain along the north side of the reservoir bridging Canyon Creek and the North Fork Trinity arms to west of the reservoir. Rerouting of this road would continue west of proposed Helena if other proposed reservoirs downstream are constructed.

c. Canyon Creek County Road from rerouted Highway 299W to present road north of the reservoir.

d. A road from Highway 299W west of the North Fork Trinity River arm north beyond the reservoir and over Backbone Ridge to the Forest Service Road 34N07Y.

e. Rerouting Highway 3 from Highway 299W south around the reservoir.

f. Connecting Forest Service Roads 33N41 and 33N45.

g. Connecting Forest Service Roads 32N03 and 33N48.

The proposals do not replace all access lost due to inundation by the proposed reservoir and do not adequately provide for administration and management of the resources. The following additional proposals would be required. See Map No. 1 for the location of all road proposals.

COUNTY ROADS

a. A new approach from rerouted Highway 299W south of Weaverville to Browns Mountain County Road, including construction of about 2,000 feet of road, would replace access into a large area of private and public lands in the Browns Mountain area.

b. Relocation of the Rush Creek County Road to replace that portion Inundated by the proposed reservoir would require 1½ miles of new construction. This would furnish access from Lewiston to recreation areas around the Rush Creek arm of the proposed reservoir and on through to Weaverville.

c. Relocation of Highway 3 will require new approaches to existing county roads on the south side of the proposed reservoir. These approaches will provide continued access into public lands.

BLM ROADS

a. Approaches will be required to three segments of the Brock Gulch Road which will be partially flooded and severed by relocated Highway 299W.

This would replace access into 7,000 acres of public lands. The estimated cost is $12,000.

b. Access lost by flooding of the Union Hill County Road would require an approach to rerouted Highway 299W from the Union Hill Recreation Site. The estimated cost is $4,000.

c. Construction of about 1 mile of road with an approach to State Highway 3 will be required to replace inundated access to public lands in the Camp Gulch and Jesse Gulch areas. The estimated cost is $61,000.

d. Relocated Highway 3 would cross Indian Creek about where the Spring Gulch Road presently crosses. A new approch would be required to replace access into the public lands. The estimated cost is $4,000.

e. An approach to relocated Highway 3 for the BLM Coal Mine Road would be required to maintain access into the public land south of Blanchard's Flat. The estimated cost is $3,000.

ROPOSED ROADS

a. Proposed recreation development would require a 2-lane paved road from Highway 3 Northwesterly to Conner Creek for recreation protection and resource management access. The estimated cost is $14,600,000.

Construction of roads is often deleterious to the streams and aesthetics of an area. End hauling should be used where side casting would either place material into streams or cause unsightly scars.

Waste material would be hauled to areas which would not be damaged and then seeded or landscaped to blend with the surroundings.

Preliminary estimates of construction costs for these proposals are as follows:

Road	Width	Length	Cost
Brock Gulch approaches (3)	16'	1500'	$12,000
Union Hill approach	24'	500'	4,000
Camp Gulch	14'	1 mi.	
Land acquisiton (5 acres)			1,600
Survey and Design			2,500
Grading			20,000
Bridge		50'	30,000
Construction Engineering (15%)			7,500
			$61,600
Spring Gulch approach	14'	500'	4,000
Coal Mine approach	14'	300'	3,000
South Shore Road	30'	24 mi.	
Engineering overhead @ $40,000/mi.			960,000
Grade and Surface @ $400,000/mi.			9,600,000
Bridges- 3 @ $2,500/ft.			4,000,000
Multiplate culverts @ $50/ft.			40,000

H. Cadastral Survey and Corner Monumentation

The following cadastral survey needs and estimated costs have been determined to adequately reference public land survey monuments that will be inundated by the Helena Reservoir. This estimate does not include the survey necessary to establish the proposed project boundary, or private lands that will be acquired for the project.

1. Survey monuments (corners) to be inundated controlling public lands (130).
2. Miles of section line survey needed to reference the inundated. corners (80).
3. Cost of Survey - $80,000

BLM would require a lead time of two to three years in order to program the work. BLM performs cadastral surveys and corner monumentation on reservoir projects as a reimburseable job.

I. Resource Protection

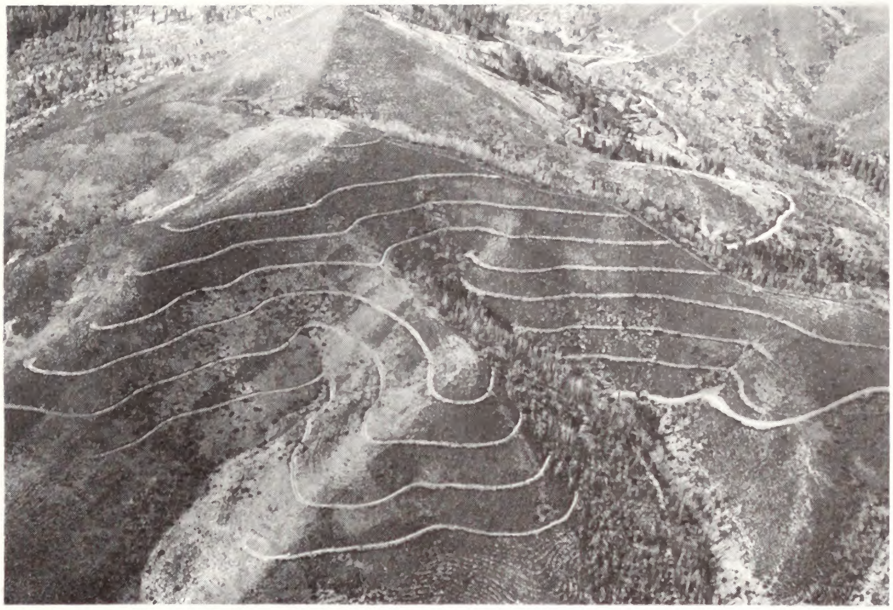
1. Without the Project

Abundant ground fuels and dry, warm summers result in a high fire danger throughout the area for much of the year. At the present time BLM contracts with the California Division of Forestry and U.S. Forest Service for fire control on BLM lands in the Trinity Planning Unit. The U.S. Forest Service provides fire control services on BLM lands in the Hayfork area and north of Junction City; the California Division of Forestry provides fire control on the remainder of the BLM lands in the Trinity Planning Unit. Protection other than fire control is the responsibility of the Bureau of Land Management on all of its lands and is tied inseparable to the management programs.

2. With the Project

New roads and recreation sites in previously inaccessible areas would require more initial intensive protection. Clearing along the major roads would be necessary to reduce the risk of wildfire and expedite fire control operations. Approximately 61 miles of clearing would be needed amounting to 738 acres at a cost of $50 per acre for a total of $36,900. Care must be exercised to prevent damage to the aesthetics and physical attributes of the area.

Firebreak clearing contracts should be developed and administered by BLM to protect the aesthetics while also being functional. Protection other than fire control an acquired lands should be accomplished in conjunction with similar work on BLM land.



Fire rehabilitation south of Douglas City. The Contour Furrowing reduces soil movement and losses.

J. Mining Claims and Minerals

The Trinity Planning Unit lies in the Klamath Mountains province. The principal rock units are pre-Cretaceous sediments, metasediments, and metavolcanics intruded by Mesozoic granitic and ultramafic rocks. Auriferous quartz viens and stringers, associated with the granitic intrusives, have been the loci of small scale lode mining activities in the past. Only one of these former lode mines is in the take area and it has been idle for many years. The quartz veins and stringers were also the primary source of the placer gold mined from the present day streams and older Weaverville Formation. The bench and river bottom gravels of the Trinity River and its tributaries have been extensively mined, but are now only the subject of occasional small scale placer operations. Many of the old placer mines are in the reservoir area, but for all practicable purposes may be considered mined out.

Minor deposits of asbestos and chromite have been found associated with the ultramafic intrusives, but not in the lands herein involved.

Large amounts of tailings from past placer mining activities exist in the Trinity River Valley and in the larger tributaries. These trailings make excellent aggregate but due to the lack of demand it has little or no present day value. In additon to the tailings, considerable good grade sand and gravel would be inundated by the proposed reservoir. However, sufficient similar material exists outside the proposed project area to more than satisfy the demand.

The U.S. Geological Survey reports that no revenue from leasable minerals will be lost as a result of the proposed project.

There are approximately 120 active mining claims in the proposed project area. An active mining claim is one located since 1964 and/or for which proofs of labor are currently recorded in the Trinity County Courthouse. Validity determination would be necessary on all of the claims. It is estimated that hearings will be held on 12 of the 120 claims. Validity determination which is performed as a reimburseable job will cost approximately $500 per claim. Hearing costs should also amount to $500 per claim.

Estimate of Costs:

a. Validity determinations on 120 claims @ $500 each	$60,000
b. Hearing costs on 12 claims @ $500 each	6,000
Subtotal	$66,000
Overhead Charges	16,500
Total estimated reimbursable charges	$82,500

Sufficient notice should be given (2-3 years) in order for BLM to program the necessary manpower required for the minerals work.

III. Financial Summary

A. Reimburseable Costs

1. Cadastral Survey (BLM Lands Only)	$80,000	
2. Mining Claim Examinations and Validity Hearings	82,500	
Subtotal (Reimburseable)		$162,500

B. Replaceable Items Chargeable to Project

1. Recreation Facilities inundated	$198,200	
2. Brock Gulch Road Approach	12,000	
3. Union Hill Road Approach	4,000	
4. Camp Gulch & Jesse Gulch Road & Approach	61,600	
5. Spring Gulch Road Approach	4,000	
6. Coal Mine Road Approach	3,000	
7. Trinity Deer Mitigation Project	63,000	
Subtotal (Replaceable)		$345,800

C. Irreplaceable Resources

1. Loss of timber production on 2,000 acres inundated - 724 MBF @ $51 = $36,924 x 7.9 (local multiplier) = $291,700 capitalized @ 5½%	$5,303,600
2. Loss of timber production on 4,110 acres preserved within the foreground and middleground - 1,488 MBF @ $51 = $75,888 x 7.9 (local multiplier) = $599,500 capitalized @ 5½%	$10,900,000

D. Effects on BLM Program Costs

1. Increased Logging Costs 4,590 acres - 1662 MBF @ $14 = $23,268 capitalized value @ 5½%	$423,055
2. Decreased Log Hauling Costs 16,890 acres - 6,114 MBF @ $1 = $6,114 capitalized value @ 5½%	$111,164
Increased Program Costs	$311,891

E. Recommended Improvements - Chargeable to Project

1.	Development of Initial Recreation Sites (5 each)		
a.	Camping units - 140 units @ $3,000/unit	$ 420,000	
b.	Picnic units - 24 units @ $2700	64,800	
c.	Beach Development	30,000	
d.	Boat Launching Ramps - 12 lanes (including parking)	900,000	
	Subtotal		$1,414,800
2.	Road Construction - New		
a.	South Shore Road		$14,600,000
3.	Fuel Break Construction		
	738 Acres @ $50/acre		36,900
	Subtotal		$14,636,900

F. Recreation and Fish and Wildlife Losses - BLM Lands

1.	Recreation Days lost - 176,500 worth $160,050 capitalized @ 5½%	$2,910,000	
2.	Hunter days lost all species 23,240 worth $138,920 capitalized @ 5½%	2,525,800	
3.	Potential loss of additional deer hunter days possible through intensive management. 23,240 worth $138,920 capitalized @ 5½%	2,525,800	
4.	Fisherman days lost (ocean and inland sport) 282,632 worth $1,421,388 capitalized @ 5½%	25,843,400	
5.	Commercial Harvest lost - 852,000 lbs. @ $0.55 capitalized @ 5½%	8,520,000	
6.	Non-consumptive wildlife use 6,265 Recreation days worth $9,400 capitalized @5½%	170,900	
	Subtotal		$42,495,900
	Total Impact to BLM		$75,570,391

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

The facts and conclusions which led to specific proposals required to implement these general recommendations are given in the body of the report. The more important conclusions and recommendations are set forth as follows:

A. On the basis of our analysis of the BLM lands and resources connected with the proposed project a negative impact of $75 million dollars on these lands and resources would be realized. This sum includes reimburseable items, replaceable items, as well as new facilities that would be necessary from the proposed project. Therefore, BLM presently opposes the project.

B. BLM recognizes that other considerations beyond these public lands and resources will be used in determining the feasibility of the proposed project and could indicate that the project should be constructed. However, BLM recommends that the negative impacts on BLM lands and resources be given full consideration in the overall determination of feasibility.

C. If in the final analysis the decision is made to construct the project, BLM has prepared alternate management plans that include recreation for the proposed project area. If the Bureau of Outdoor Recreation report recommends Federal administration of recreation, BLM, being the dominant resource management agency in the project area, and therefore the logical management agency, is ready to expand its present administrative programs to include the additional recreation resulting from the proposed project.

D. In the event the project is authorized BLM would recommend as follows:

1. Because of the juxtaposition of BLM lands and lands to be acquired and recognizing BLM's land and resource management expertise, management responsibilities should be extended to include the acquired lands.

2. BLM lands in the project area are classified for retention under the Classification and Multiple Use Act (P.L. 607). Segregation from appropriation under the mining laws would make a Reclamation Withdrawal on most lands above high waterline unnecessary.

3. The 2000 acres of BLM commercial forest land which will be inundated supports a presently merchantable timber volume of 20,900,000 board feet. Based on current values, this volume represents a marketable resource worth $1,065,900 which, if not sold, would become an additional loss attributable to the project. If the project is authorized BLM must be given sufficient advance notice so that orderly disposal of the merchantable timber can be accomplished prior to construction activities.

4. Road and recreation construction should be coordinated and completed prior to reservoir filling in order to meet resource management and user needs.

5. Wildlife mitigation would normally be a project feature. However, there should be no deer habitat mitigation work until a deer management plan assuring proper harvest is implemented.

6. The soils of the Trinity River drainage are highly erodible. Great care would be required to prevent excessive erosion from damaging the recreation potential, and possible shortening the life of the project. It is recommended that watershed management be given increased attention, and that the specific recommendations made in the body of this report be carefully evaluated and acted upon, where appropriate.

7. Based on resource management requirements to facilitate watershed protection, fire protection, timber management, and recreation development and use, a road from State Highway 3 on Little Creek northwesterly, in the vicinity of the proposed reservoir, to Road 33N41 in the Conner Creek drainage should be constructed.

8. If the project is authorized, a working agreement should be consummated between the Bureau of Reclamation and BLM to cover such items as (1) fire protection of the area during the construction period, (2) supervision of clearing operations, road construction, powerline relocations so as to protect aesthetic values, retain scenic corridors, and provide for the healing and rehabilitation of scars on the landscape, (3) provision for physical access to facilitate BLM resource development and management activities, (4) planning and construction of replacement roads, (5) provision for adequate notice to BLM to plan and implement the necessary project related cadastral survey and mining claim validity determination work.

9. Aesthetic considerations are very important because of the anticipated heavy recreation use on and around the proposed reservoir. Borrow areas, spoil areas and other disturbing operations should be limited to elevations below the minimum pool level to the extent practicable, and unavoidable disturbance above this level should be restored as nearly as possible to its natural appearance.

APPENDIX

A. List of lands (proposed withdrawal)

B. Maps

1. Visibility & Road Location Map
2. Public Domain Lands - Trinity Planning Unit
3. Special Environmental Protection Areas
4. Current Land Use
5. BLM Recreation without the Reservoir
6. Proposed Recreation with the Reservoir
7. Weaverville Deer Herd Winter Range

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

TABULATION OF BLM LANDS WITHIN PROPOSED PROJECT BOUNDARY

Legal Description		Public Domain Acres	Comments
T. 32 N., R. 9 W.			
Sec. 4:	Lot 1	40.60	
	" 2	40.36	
	" 3	40.12	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20 per State Memo 1/3/56.
	SE¼NE¼	40.00	
	W½SW¼	80.00	Wdn. by EX. O. of 11/25/11; PSR #232 under Act 6/25/10 per F 12/8/11.
	E½SE¼	80.00	
Sec. 5:	E½W½SE¼SW¼	10.00	
	NE¼SE¼	40.00	Rest. from PSR #729; Subj. to Sec. 24 act 6/10/20 per PLO 2190 of 8/22/60.
Sec. 6:	Lot 1	40.62	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 2/8/11.
	Lot 2	29.70	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 2/8/11.
	Lot 3	32.14	
	N½NW¼ and S½ Lot 4	26.00	
	Lot 5	37.25	
	Lot 6	35.05	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	Lot 7	41.71	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11
	Lot 8	7.09	
	Lot 9	1.77	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	Lot 10	20.66	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.

Legal Description		Public Domain Acres	Comments
T. 32 N., R. 9 W. (continued)			
Sec. 6:	N½ of Lot 11	19.55	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	SW¼ of Lot 11	10.00	
	Lot 12	1.50	
	Lot 37	79.40	
	SE¼NE¼	40.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	SE¼SW¼	40.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	NW¼NW¼SE¼	10.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	S½SE¼	80.00	
Sec. 7:	Lot 1	41.55	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	Lot 2	41.26	
	NE¼	160.00	
	NE¼NW¼	40.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	SE¼NW¼	40.00	
Sec. 8:	NE¼NW¼	40.00	
	S½NW¼	80.00	
Sec. 18:	Lot 1	40.34	
	" 2	39.95	
	" 3	39.57	
	" 4	39.19	
	E½W½	160.00	

Legal Description		Public Domain Acres	Comments
T. 32 N., R. 9 W. (continued)			
Sec. 30:	Lot 1	37.17	
	" 2	37.12	
	" 3	37.07	
	" 4	37.02	
	NE¼	160.00	
	NE¼NW¼	40.00	
T. 32 N., R. 10 W.			
Sec. 1	W½E½ Lot 1	10.00	
	W½ Lot 1	20.00	
	Lot 5	32.00	
	" 7	1.96	
	" 8	3.23	
	" 9	3.78	
	" 10	2.35	
	" 11	2.85	
	" 12	2.00	
	" 13	2.48	
	" 14	4.64	
	" 15	2.19	
	" 17	1.25	
	" 18	2.50	
	" 19	2.50	
	" 20	1.25	
	" 21	5.00	
	" 22	3.12	
	" 23	2.19	
	S½NW¼	80.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act of 6/25/10 Per F 12/8/11.
	N½SW¼	80.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act of 6/25/10 per F 12/8/11.
	SE¼SW¼	40.00	Wdn. by EX. O. of 11/25/11; PSR #232 under Act of 6/25/10 per F 12/8/11 Wdn. by EX. O. 10355 of 5/26/52; PLO 3997 from all forms of Appr. on 4/13/66 F.R. 5/20/66,

Legal Description		Public Domain Acres	Comments
T. 32 N., R. 10 W. (continued)			
Sec. 1:	W½SW¼NE¼SE¼	5.00	
	W½NW¼SW¼SE¼	5.00	
	NE¼SE¼SE¼	10.00	
Sec. 2:	Lot 1	40.47	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	Lot 2	40.45	
	Lot 3	40.43	
	Lot 4	40.40	
	S½NE¼	80.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	SE¼NW¼	40.00	
	SW¼NW¼	40.00	
	E½SW¼	80.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	W½SW¼	80.00	
	SE¼	160.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
Sec. 10:	NE¼NE¼	40.00	
	SE¼SW¼	40.00	
	W½SE¼	80.00	
Sec. 12:	E½NE¼NE¼	20.00	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20 F.R. 9/4/55.
	N½SW¼NE¼NE¼	5.00	
	SE¼SW¼NE¼NE¼	2.50	
	SE¼NW¼NE¼	10.00	Rest. from PSR #232: Subj to Sec. 24 act 6/10/20 F.R. 9/4/55.
	E½SE¼NW¼	20.00	
	E½W½SE¼NE¼	10.00	
	SW¼SW¼SE¼NE¼	2.50	

Legal Description		Public Domain Acres	Comments
T. 32 N., R. 10 W. (continued)			
Sec. 12	NE¼NW¼	40.00)	Wdn. by EX. O. of 11/25/11; PSR #232 under act of 6/25/10 per F 12/8/11. Wdn. by EX. O. 10355 of 5/26/52; PLO 3322 from all forms of Appr. on 1/3/64 F.R. 2/5/64.
	E½NW¼NW¼	20.00)...	
	W½NW¼NW¼	20.00	Wdn. by EX. O. of 11/25/11; PSR #232 under act of 6/25/10 per F 12/8/11. Wdn. by EX. O. 10355 of 5/26/52; PLO 3997 from all forms of Appr. on 4/13/66 F.R. 5/20/66.
	W½SW¼NW¼	20.00	Wdn. by EX. O. 10355 of 5/26/52; PLO 3997 from all forms Appr. on 4/13/66 F.R. 5/20/66.
	NE¼SE¼	40.00	
	S½NE¼NW¼SE¼	5.00	
	S½NW¼SE¼	20.00	
	N½SE¼SE¼	20.00	
	N½SW¼SE¼SE¼	5.00	
	SE¼SW¼SE¼SE¼	2.50	
	SE¼SE¼SE¼	10.00	
Sec. 14:	NE¼	160.00	
	NE¼NW¼	40.00	
	W½SW¼	80.00	
	N½N½NW¼SE¼	10.00	
T. 33 N., R. 8 W.			
Sec. 17:	W½SE¼SW¼	20.00	
Sec. 18:	Lot 1	40.22	Rest. from PSR #232: Subj. to Sec. 24 act 6/10/20.
	Lot 4	41.57	Por. w/n 50' CL wdn. 12/13/34; pp #1295 under Sec. 24 act 6/10/20 per FPC Hr. 4/13/36. Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.

Legal Description		Public Domain Acres	Comments
T. 33 N., R. 8 W. (continued)			
Sec. 18:	E½NE¼NW¼	20.00	Wdn. by PLO 2225 12/16/60; First form wdl under Sec. 3 act 6/17/02. Rest. from PSR #232; Subj. to Sec. 24 act of 6/10/20.
	W½NE¼NW¼	20.00)	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	SE¼NW¼	40.00)	
	W½SE¼SW¼	20.00)	Por. w/n 50' CL wdn. 12/13/34; pp #1295 under Sec. 24 act 6/10/20 per FPC ltr. 4/13/36. Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	SE¼SE¼SW¼	10.00)	
	W½E½NE¼SE¼	10.00)	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	W½NE¼SE¼	20.00)	
	N½NW¼SE¼	20.00))	
	N½S½NW¼SE¼	10.00)	
	S½SE¼NW¼SE¼	5.00)	
	S½SW¼NW¼SE¼	5.00	
	NE¼SW¼SE¼	10.00)	Por. w/n 50' CL wdn. 12/13/34. pp #1295 under Sec. 24 act 6/10/20 per FPC ltr. 4/13/60. Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	S½SW¼SE¼	20.00)	
	NW¼SE¼SE¼	10.00	Por. w/n 50' CL wdn. 12/13/34; pp #1295 under Sec. 24 act 6/10/20 per FPC ltr. 4/13/60. Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
Sec. 19:	S½NW¼NE¼	20.00)	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20 per F 4/15/38 to Placer Mining only.
	N½NE¼NW¼	20.00)	
	N½S½NE¼NW¼	10.00)	
	S½N½SE¼NW¼	10.00)	Wdn. by EX. O. of 11/25/11; PSR #232 under act 6/25/10 per F 12/8/11.
	S½SE¼NW¼	20.00)	

Legal Description	Public Domain Acres	Comments
T. 33 N., R. 9 W.		
Sec. 12: E½NW¼NW¼	20.00	
NE¼NW¼	40.00	
N½SE¼	80.00	
N½SW¼SE¼	20.00	
NE¼SE¼SE¼	10.00	
S½SE¼SE¼	20.00	
Sec. 13: NE¼NE¼	40.00)	
N½SE¼NW¼	20.00)	...Rest. from PSR #232. Subj. Sec.
SE¼SE¼NW¼	10.00)	24 act 6/10/20.
N½SW¼	80.00	Undivided ½ interest to U. S.
Sec. 18: Por. Lot 46	40.00	
Sec. 19: Lot 5	12.37	
Lot 6	28.03	
Lot 8	35.31	
Por. Lots 44 & 46	47.66	
W½SE¼NE¼	20.00	
W½NE¼SE¼	20.00	
N½SE¼NW¼SE¼	5.00	
SE¼SE¼NW¼SE¼	2.50	
Sec. 20: W½	320.00	
Sec. 22: N½SE¼	80.00	Por. w/n 50' CL wdn. 12/13/34; pp. #1295 under Sec. 24 act 6/10/20 per FPC ltr 4/13/36.
SE¼SE¼	40.00	Por. w/n 50' CL wdn. 12/13/34; pp #1295 under Sec. 24 act 6/10/20 per FPC ltr. 4/13/36. Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
SW¼SE¼	40.00	Rest. from PSR #232. Subj. to Sec. 24 act 6/10/20.

Legal Description		Public Domain Acres	Comments
T. 33 N., R. 9 W. (continued)			
Sec. 23:	N½N½NE¼NE¼	10.00)	
	SE¼NE¼NE¼	10.00)...	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	W½E½SW¼NE¼	10.00)	
	NE¼SE¼NE¼	10.00)	
	S½SE¼NE¼	20.00)	Por. w/n 50' CL wdn. 12/13/34; pp #1295 under Sec. 24 act 6/10/20. Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	S½S½SW¼SW¼	10.00)...	
	NE¼SE¼SW¼	10.00	Por. w/n 50' CL wdn. 7/12/54; pp #1295 under Sec. 24 act 6/10/20. Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	S½SE¼SW¼	20.00	Por. w/n 50' CL wdn. 12/13/34; pp #1295 under Sec. 24 act 6/10/20. Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	S½NW¼SE¼	20.00	Por. w/n 50' CL. wdn. 7/12/54; pp #1295 under Sec. 24 act 6/10/20. Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
Sec. 24:	SW¼NW¼NW¼	10.00	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	S½SW¼	80.00	
Sec. 26:	SE¼NE¼	40.00	
Sec. 27:	NE¼NE¼	40.00)	
	S½SE¼SW¼	20.00)...	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.
	SE¼NW¼SE¼	10.00)	
	SW¼SE¼	40.00)	
Sec. 28:	N½NE¼	80.00	
	W½SW¼NE¼	20.00	
	E½SE¼NE¼	20.00	
	NW¼	160.00	
	N½SW¼	80.00	
	S½SW¼	80.00	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.

Legal Description		Public Domain Acres	Comments
T. 33 N., R. 9 W. (continued)			
Sec. 30:	Lot 1	41.16	
	" 2	41.24	
	" 5	37.61	
	" 6	3.42	
	" 7	26.68	
	" 8	39.88	
	E½NE¼	80.00	
	SW¼NE¼	40.00	
	SE¼	160.00	
Sec. 32:	N½	320.00	
	SW¼SW¼	40.00)	
	SE¼SW¼	40.00)	
	NE¼NW¼NW¼SW¼	2.50)	
	NW¼SE¼NW¼NW¼SW¼	.625)	
	W½SE¼SW¼NW¼SW¼	1.25)	
	SE¼SE¼SW¼NW¼SW¼	.625)	
	S½SE¼NW¼SW¼	5.00)	
	S½NE¼SE¼NW¼SW¼	1.25)	
	W½W½SW¼SW¼NE¼SW¼	.625)	..Rest. from PSR #232; Subj. to
	E½W½SE¼SW¼NE¼SW¼	.625)	Sec. 24 act 6/10/20.
	SE¼NE¼SW¼NE¼SW¼	.625)	
	E½SE¼SW¼NE¼SW¼	.625)	
	NW¼SW¼SE¼	10.00)	
	E½SW¼SW¼SE¼	5.00)	
	S½SE¼SW¼SE¼	5.00)	
	S½SE¼SE¼	20.00)	
	E½NE¼SE¼SE¼	5.00)	
	NE¼NW¼SE¼	10.00)	
	NE¼SE¼	40.00)	
Sec. 33:	S½NE¼	80.00	Rest. from PSR #232; Subj. to Sec. 24 act 6/10/20.

Legal Description		Public Domain Acres	Comments
T. 33 N., R. 9 W. (continued)			
Sec. 34:	NE¼	160.00	
	E½NW¼	80.00	
	E½NW¼NW¼	20.00	)...Rest. from PSR #232; Subj. to
	SW¼NW¼	40.00	) Sec. 24 act 6/10/20.
	N½S½	160.00	
Sec. 35:	W½W½E½NW¼	20.00	
	W½NW¼	80.00	
T. 33 N., R. 10 W.			
Sec. 4:	E½SW¼	80.00	
	E½NW¼SW¼	20.00	
	W½NW¼NW¼SW¼	5.00	
	SE¼NW¼NW¼SW¼	2.50	
	SW¼NW¼SW¼	10.00	
	SW¼SW¼	40.00	
Sec. 5:	Lot 3	40.30	
	" 4	40.34	
	S½NW¼	80.00	
	N½SW¼	80.00	
	W½SE¼	80.00	
Sec. 6:	Lot 1	40.31	
	Lot 2	40.21	
	Lot 3	40.11	
	Lot 4	8.87	
	Lot 5	8.95	
	Lot 6	9.05	
	Lot 7	9.15	
	S½NE¼	80.00	
	SE¼NW¼	40.00	
	E½SW¼	80.00	
	SE¼	160.00	

Legal Description		Public Domain Acres	Comments
T. 33 N., R. 10 W. (continued)			
Sec. 7:	Lot 1	9.25)	W/n 75' of CL wdn. 8/1050; pp #99 under Sec. 24 of Act of 6/10/20 per FPC ltr. 11/21/51.
	" 2	9.35)...	
	" 3	2.34	
	" 4	2.47	
	" 5	35.25	W/n 75' of CL wdn. 8/10/50; pp #99 under Sec. 24 of Act of 6/10/20 per FPC ltr. 11/21/51.
	" 6	9.05	
	" 7	10.55	
	" 8	4.09	
	" 9	13.30	
	" 10	2.03	
	N½NE¼	80.00	
	S½NE¼	80.00)	W/n 75' of CL wdn. 8/10/50; pp #99 under Sec. 24 of Act of 6/10/20 per FPC ltr. 11/21/51.
	W½NE¼NW¼	20.00)...	
	E½NE¼NW¼	20.00	
Sec. 8:	Lot 2	26.30)	W/n 75' of CL wdn. 8/10/50; pp #99 under Sec. 24 of Act of 6/10/20 per FPC ltr. 11/21/51.
	" 3	34.70)...	
	" 5	2.72	
	" 6	18.00	
	" 7	39.71	
	" 8	35.30	
	" 9	5.20	
	" 10	3.90	
	" 11	26.20	
	" 12	21.80	
	Por. ML. 42	30.00	
	NW¼NE¼	40.00	
	NE¼NW¼	40.00	
	SE¼SW¼	40.00	
	W½SE¼	80.00	
Sec. 9:	Por. Lot 42	30.00	

Legal Description		Public Domain Acres	Comments
T. 33 N., R. 10 W. (continued)			
Sec. 17:	NW¼	160.00	
	S½SW¼	40.00	
Sec. 18:	Lot 1	7.50	
	" 5	36.60	
	" 6	36.80	
	" 7	27.70	
	" 9	39.30	
	" 10	17.30	
	" 11	39.85	
	" 12	20.60	
	" 13	2.00	
Sec. 19:	Lot 5	37.60	
	" 6	4.80	
	" 7	20.80	
	" 8	12.65	
	" 11	8.00	
	" 12	39.05	
	" 13	16.40	
	E½SE¼	80.00	
Sec. 20:	Lot 2	37.20	
	SE¼NW¼	40.00	
	N½SW¼	80.00	
	SE¼	160.00	
Sec. 25:	SE¼SE¼	40.00	
Sec. 26:	Lot 7	20.61	
	" 8	21.52	
	" 11	19.77	
	Por. M.S. 4008	49.74	
	SE¼NE¼	40.00	
	E½SE¼	80.00	

Legal Description		Public Domain Acres	Comments
T. 33 N., R. 10 W. (continued)			
Sec. 29:	E½	320.00	
Sec. 32:	Lot 2	35.80	
	E½NE¼	80.00	
	E½W½NE¼	40.00	
	N½SE¼	80.00	
	SE¼SE¼	40.00	
Sec. 34:	NE¼	160.00)	Wdn by EX. O. of 1/25/11; PSR #232 under Act of 6/25/10 per F 12/8/11.
	E½NW¼	80.00)...	
	SW¼NW¼	40.00)	
	NW¼NW¼	40.00	
Sec. 35:	Lot 1	30.00	
	" 2	20.00	
	" 3	20.00	Wdn by EX. O. of 11/25/11; PSR #232 Act of 6/25/10 Per F 12/8/11
	" 4	20.00	
	" 5	30.00	
	" 6	30.00	Wdn. by EX. O. of 11/28/11; PSR #232 Act of 6/25/10 per F 12/8/11
	Por. M.S. 4008	30.00	
	NW¼NW¼	40.00	Rest. from PSR #232; Subj; to Sec. 24 Act 6/10/20.
	S½NW¼	80.00)	Wdn. by EX. O. of 11/28/11; PSR #232 Act of 6/25/10 per F 12/8/11.
	SW¼	160.00)...	
	S½SE¼	80.00)	
T. 33 N., R. 11 W.			
Sec. 1:	Lot 1	39.90	
	Lot 2	39.70)	Wdn. 10/14/25; PSC #117 under act 3/3/79 Full force under act 6/10/20 per F 10/14/25. All w/n 75' of CL wdn. 8/10/50; pp #99 under Sec. 24 Act of 6/10/20 per FPC ltr. 11/21/51.
	Lot 10-E½	19.78)...	

Legal Description	Public Domain Acres	Comments
T. 33 N., R. 11 W. (continued)		
Sec. 1: Lot 10-W½	17.01	Wdn. 10/14/25; PSC #117 under act 3/3/79 Full force under act 6/10/20 per F 10/14/25.
Lot 11	21.90	
Lot 12	37.99	Wdn. by EX. O. 10355 of 5/26/52; PLO #3702 from all forms of Appr. 6/10/65 F.R. 6/18/65.
SW¼NE¼	40.00	All w/n 75' of CL wdn. 8/10/50; pp #99 under Sec. 24 act 6/10/20 per FPC ltr. 11/21/51.
N½SE¼NE¼	20.00	
SW¼SE¼NE¼	10.00	
N½N½SE¼SE¼NE¼	2.50	
S½S½SE¼SE¼NE¼	2.50	
NW¼NE¼SW¼	10.00)	Wdn. by EX. O. 10355 of 5/26/52; PLO #3702 from all forms of Appr. on 6/10/65 F.R. 6/18/65.
NE¼NW¼SW¼	10.00)	
NE¼NE¼SW¼	10.00	
NE¼SE¼	40.00	
NW¼SE¼	40.00)	All w/n 75' CL wdn 8/10/50; pp #99 under Sec. 24 act of 6/10/20 per FPC ltr. 11/21/51.
N½SW¼SE¼	20.00)	
N½S½SW¼SE¼	10.00)	
SE¼SW¼SW¼SE¼	2.50)	
S½SE¼SW¼SE¼	5.00)	
SE¼SE¼	40.00)	
Sec. 12: Por. E½, Lot 1	16.30	
Lot 3	15.12	
Lot 6	4.04	Rest. from PSC #117 (DA 1034); Subj. to Sec. 24 Act 6/10/20 per PLO 3399.
Lot 7	21.70	
Por. Lot 58	40.36	Wdn. 8/18/52; PSC #426 under act 3/3/1879 Full force under Sec.24 act 6/10/20 per Dir. Memo 8/18/52.
NE¼NE¼	40.00	All w/n 75' of CL wdn. 8/10/50; pp #99 under Sec. 24 Act 6/10/20 per FPC 11/21/51.

Legal Description		Public Domain Acres	Comments
T. 33 N., R. 11 W. (continued)			
Sec. 13	Lot 4	1.75	
	Lot 5	23.20	
	Por. lot 58	2.00	
T. 34 N., R. 10 W.			
Sec. 30:	Lot 1	8.23	
	" 2	8.30	
	" 3	8.36	
	" 4	8.43	
	SE¼NW¼	40.00	
	E½SW¼	80.00	
Sec. 31:	Lot 1	8.50	
	" 2	8.58	
	" 3	8.66	
	" 4	9.08	
	" 5	41.40	
	" 6	41.20	
	" 7	40.99	
	E½NW¼	80.00	
	NE¼SW¼	40.00	
Sec. 32:	Lot 1	40.77	
	" 2	40.55	
T. 34 N., R. 11 W.			
Sec. 4:	SE¼	160.00	
Sec. 9:	E½	320.00	
Sec. 10:	NW¼	160.00	
Sec. 16:	SE¼SE¼	40.00	
Sec. 21:	E½	320.00	

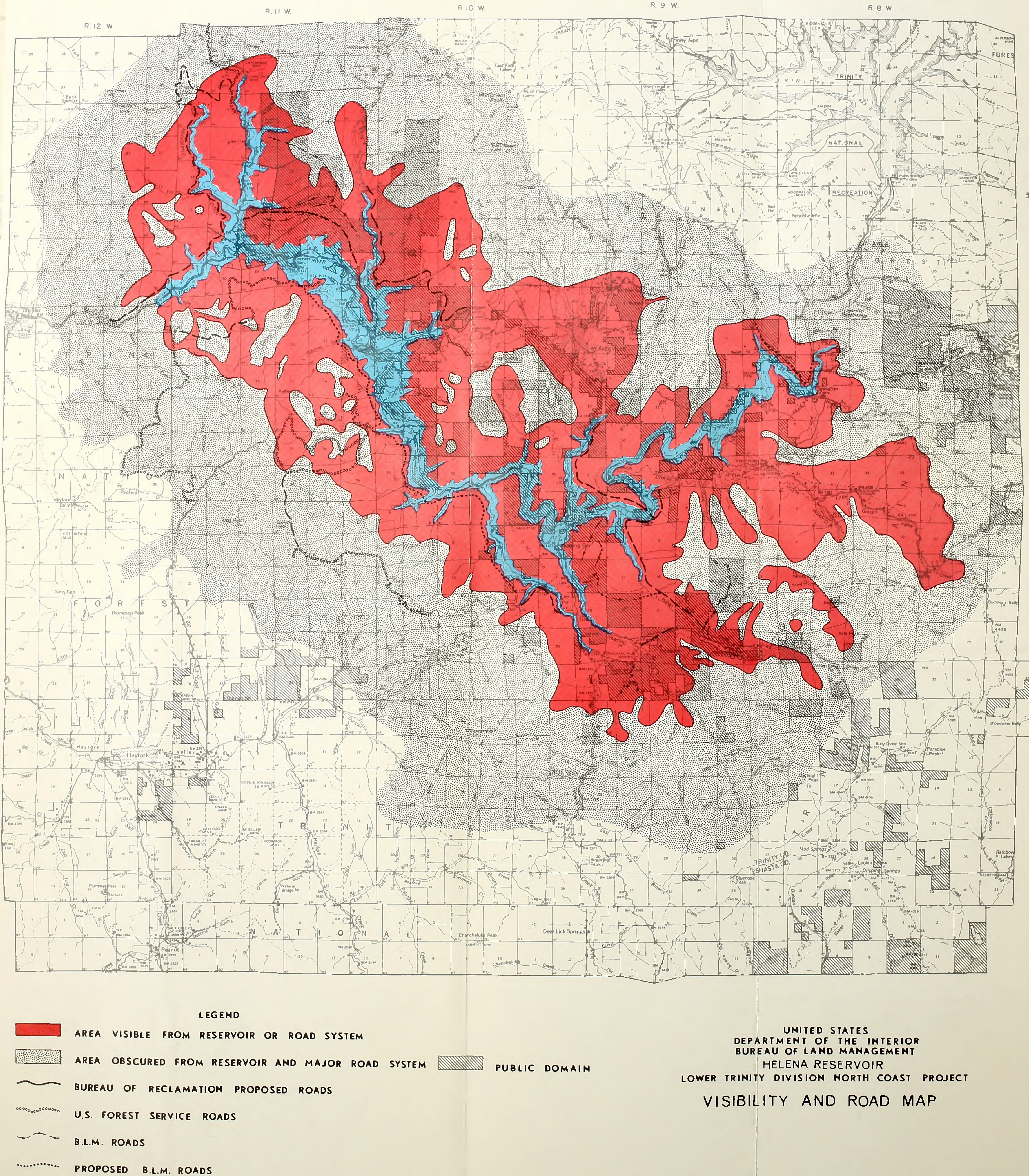
Legal Description		Public Domain Acres	Comments
T. 34 N., R. 11 W. (continued)			
Sec. 21:	E½W½	160.00	
	SW¼NW¼	40.00)	Wdn. by EX. O. of 1/24/16; PSR #519 under act 6/25/10 per F 2/3/16.
	W½SW¼	80.00)...	
Sec. 22:	W½	320.00	
Sec. 25:	NE¼NE¼	40.00	
	W½NE¼	80.00)	Wdn. by EX. O. 1/14/15; PSR #476 under act 6/25/10 per F 1/14/15. All w/n 100 ft. CL wdn. 8/8/21; pp #99 under Sec. 24 act of 6/10/20.
	SE¼NE¼	40.00)...	
	SW¼	160.00	
	N½SE¼	80.00	Wdn. by EX. O. 1/14/15; PSR #476 under act 6/25/10 per F 1/14/15. All w/n 100 ft. CL wdn. 8/8/21; pp #99 under Sec. 24 act of 6/10/20.
	SW¼SE¼	40.00	Wdn. by EX. O. 1/14/15: PSR #476 under act 6/25/10 per F 1/14/15.
	SE¼SE¼	40.00	Wdn. by EX. O. 1/14/15; PSR #476 under act 6/25/10 per F 1/14/15. All w/n 100 ft. CL wdn. 8/8/21; pp #99 under Sec.24 act 6/10/20.
Sec. 26:	Lot 1	38.14	
	NW¼	160.00	
	E½SE¼	80.00	
	SE¼SE¼	40.00	
Sec. 27:	N½	320.00	
	N½SW¼	80.00	
	SW¼SW¼	40.00	Wdn. by EX. O. 11/28/11; PSR #232 under act 6/25/10 per F 12/8/11.
	SE¼SW¼	40.00	
	W½SE¼	80.00	

Legal Description		Public Domain Acres	Comments
T. 34 N., R. 11 W. (continued)			
Sec. 28:	NE¼	160.00	
	NE¼NW¼	40.00	
	NW¼NW¼	40.00	Wdn. by EX. O. 1/24/16; PSR #519 Under act of 6/25/10 per F 2/3/16.
	S½NW¼	80.00)	Wdn. by EX. O. 11/28/11; PSR #232 under act 6/25/10 per F 12/8/11.
	NE¼SW¼	40.00)	
	E½NW¼SW¼	20.00)...	
	NW¼NW¼SW¼	10.00)	
	E½SW¼SW¼	20.00)...	Wdn. by EX. O. 11/28/11; PSR #232 under act 6/25/10 per F 12/8/11. All w/b 75' CL wdn. 8/10/50; pp #99 under Sec.24 act 6/10/20 per FPC ltr. 11/21/51.
	SE¼SW¼	40.00)	
	SE¼	160.00	Wdn. by EX. O. 11/28/11; PSR #232 under act 6/25/10 per F 12/8/11.
Sec. 34:	Lot 1	9.83)	All w/n 75' CL wdn. 8/10/50; pp #99 under Sec. 24 act 6/10/20 per FPC ltr. 12/21/51
	" 2	5.40)...	
	" 3	1.13)	Wdn. by EX. O. 11/28/11; PSR #232 under act 6/25/10 per F 12/8/11. All w/n 75' CL. wdn. 8/10/50; pp #99 under Sec. 24 act 6/10/20 per FPC ltr. 12/21/51.
	" 4	39.42)	
	" 5	3.60)	Wdn. by EX. O. 11/28/11; PSR #232 under act 6/26/10 per F 12/8/11.
	" 6	22.55)	
	" 7	4.83)	
	N½SW¼NW¼	20.00)...	
	NE¼SE¼SW¼NW¼	2.50)	
	S½SW¼SW¼NW¼	5.00)	
Sec. 35:	Lot 1	22.70	All w/n 50 CL wdn. by EX. O. 4/11/18; PSR #682 under act 6/25/10 per F 4/11/18. All w/n 75' CL wdn. 8/10/50; pp #99 under Sec. 24 act 6/10/20 per FPC ltr. 11/21/51.

Legal Description		Public Domain Acres	Comments
T. 34 N., R. 11 W. (continued)			
Sec. 35:	Lot 2	3.25	All w/n 50' CL wdn. by EX. O. 4/11/18; PSR #682 under act 6/25/10 per F 4/11/18.
	Lot 3	0.88	All w/n 50' CL wdn. by EX. O. 4/11/18; PSR #682 under act 6/25/10 per F 4/11/18. All w/n 75' CL wdn. 8/10/50; pp #99 under sec. 24 act 6/10/20 per FPC ltr. 11/21/51.
	Lot 4	6.74	All w/n 50' CL wdn. by EX. O. 4/11/18; PSR #682 under Act 6/25/10 per F 4/11/18.
	Lot 5	0.12	
	Lot 6	0.08	
	Lot 7	0.55	
	Lot 8	7.18	
	Lot 10	1.54	
	Lot 51	30.00	All w/n 50' CL wdn. by EX. O. 4/11/18; PSR #682 under Act 6/25/10 per F 4/11/18.
Sec. 36:	Lot 1	28.05	Wdn. by EX. O. 4/18/11; PSR #682 under act 6/25/10 per F 4/11/18. All w/n 75' CL wdn. 8/10/50; pp #99 under Sec. 24 act 6/10/20 per FPC ltr. 11/21/51.
	Lot 2	2.91	Wdn. by EX. O. 4/18/11; PSR #682 under act 6/25/10 per F 4/11/18.
	Lot 3	11.10	Wdn. by EX. O. 1/14/15; PSR #476 under act of 6/25/10 per F 1/14/15.

Legal Description		Public Domain Acres	Comments
T. 34 N., R. 11 W. (continued)			
Sec. 36:	Lot 4	2.02	Wdn. by EX. O. 4/18/11; PSR #682 under act of 6/25/10 per F 4/11/18. All w/n 100' CL wdn. 8/8/21; pp #99 under Sec. 24 act of 6/10/20.
	Lot 5	35.80	Wdn. by EX. O. 1/14/15; PSR #476 under act 6/25/10 per F 1/14/15. All w/n 100' CL wdn. 8/8/21; pp #99 under Sec. 24 act 6/10/20.
	Lot 6	21.62	All w/n 75' CL wdn. 8/10/50; pp#99 under Sec. 24 act 6/10/20 per FPC ltr. 11/21/51.
	Lot 7	2.41	
	E½SE¼	80.00	

TOTAL: 16,880 (Rounded)



LEGEND

🟥 AREA VISIBLE FROM RESERVOIR OR ROAD SYSTEM

░ AREA OBSCURED FROM RESERVOIR AND MAJOR ROAD SYSTEM ▨ PUBLIC DOMAIN

━ BUREAU OF RECLAMATION PROPOSED ROADS

°°°°° U.S. FOREST SERVICE ROADS

-⌃- B.L.M. ROADS

······· PROPOSED B.L.M. ROADS

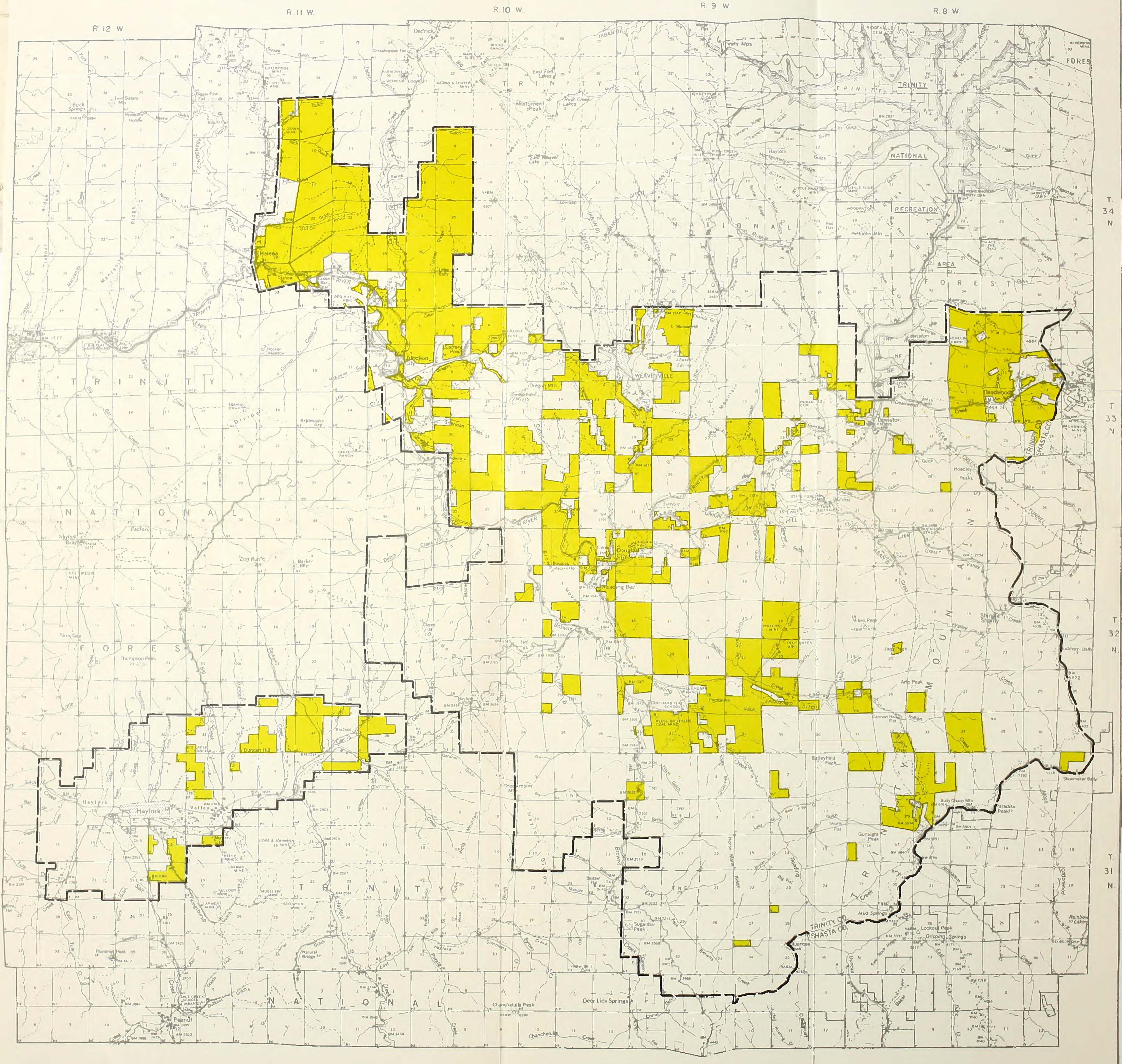
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
HELENA RESERVOIR
LOWER TRINITY DIVISION NORTH COAST PROJECT

VISIBILITY AND ROAD MAP

1/2" = 1 MILE

MOUNT DIABLO MERIDIAN

MAP 1



—— PLANNING UNIT BOUNDARY

🟨 PUBLIC DOMAIN

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HELENA RESERVOIR

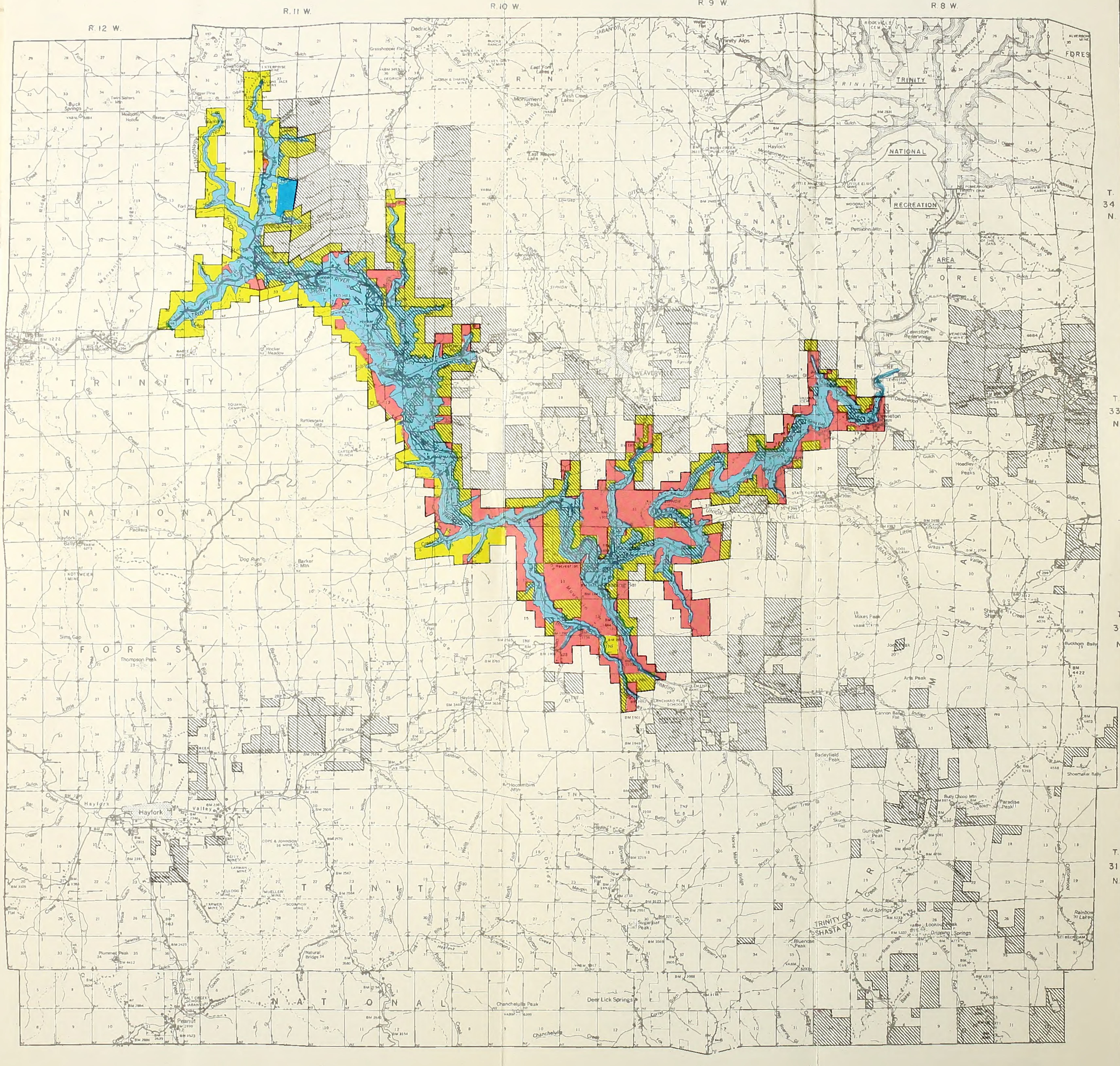
LOWER TRINITY DIVISION NORTH COAST PROJECT

TRINITY PLANNING UNIT

1/2" = 1 MILE

MOUNT DIABLO MERIDIAN

MAP 2



LEGEND

🟨 PUBLIC LANDS TO BE SEGREGATED FROM MINERAL ENTRY FOR ENVIRONMENTAL PROTECTION ADJACENT TO THE RESERVOIR

🟥 PRIVATE LANDS TO BE PURCHASED BY BUREAU OF RECLAMATION FOR ENVIRONMENTAL PROTECTION ADJACENT TO THE RESERVOIR

🟦 STATE OF CALIFORNIA LANDS NEEDED FOR ENVIRONMENTAL PROTECTION

▨ PUBLIC DOMAIN

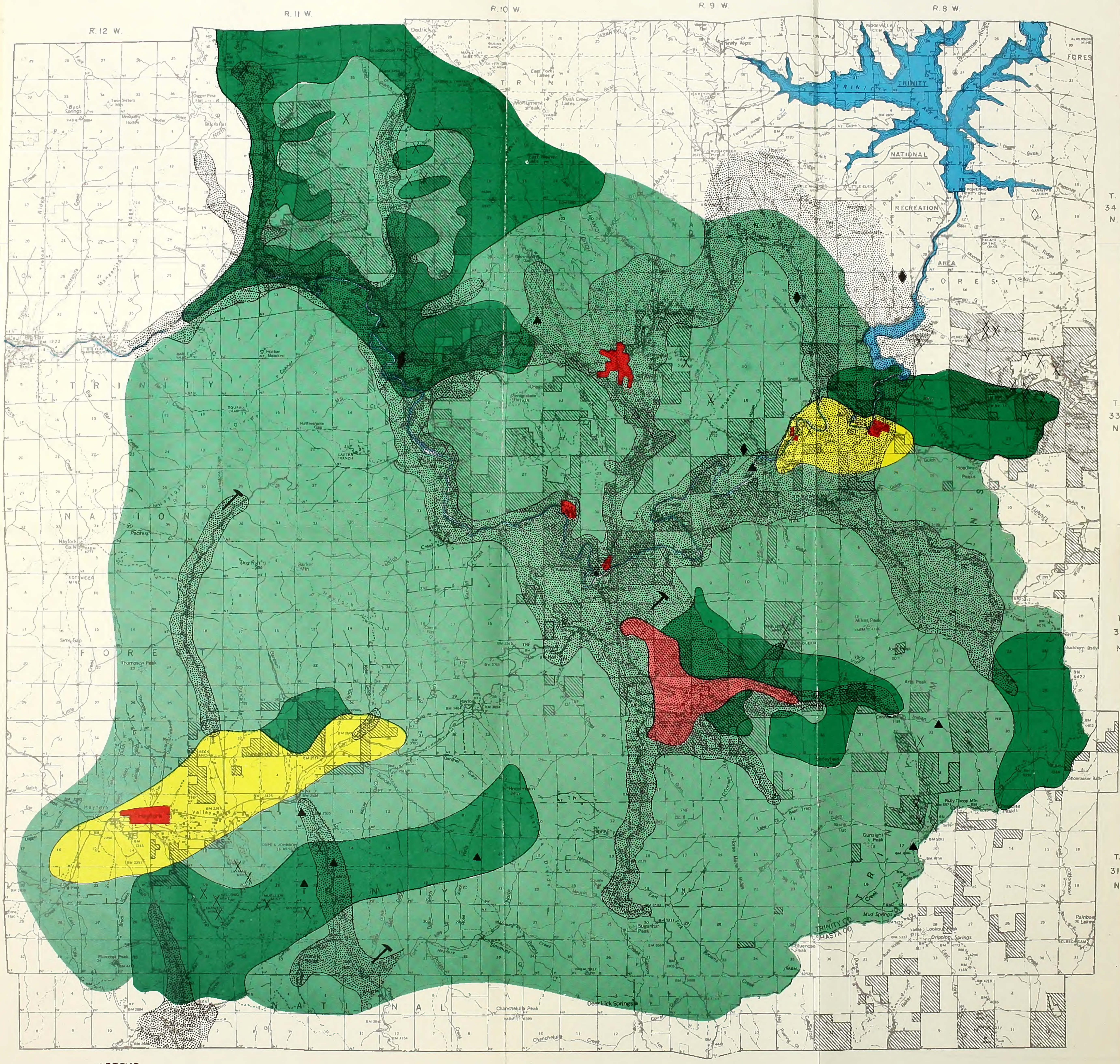
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
HELENA RESERVOIR
LOWER TRINITY DIVISION NORTH COAST PROJECT

ENVIRONMENTAL PROTECTION

1/2" = 1 MILE

MOUNT DIABLO MERIDIAN

MAP 3



LEGEND

🟥 URBAN - SUBURBAN
🟨 AGRICULTURE
🟩 BRUSH - WOODLAND
🟩 TIMBER
🟥 GRAZING
🟦 WATER
▒ INTENSIVE RECREATION
△ DEVELOPED B L M RECREATION SITES
⛏ ROCKHOUND AREAS
X GOLD
△ SAND - GRAVEL
▲ LIMESTONE
◆ STONE - DIMENSION
◇ STONE - CRUSHED

▨ PUBLIC DOMAIN

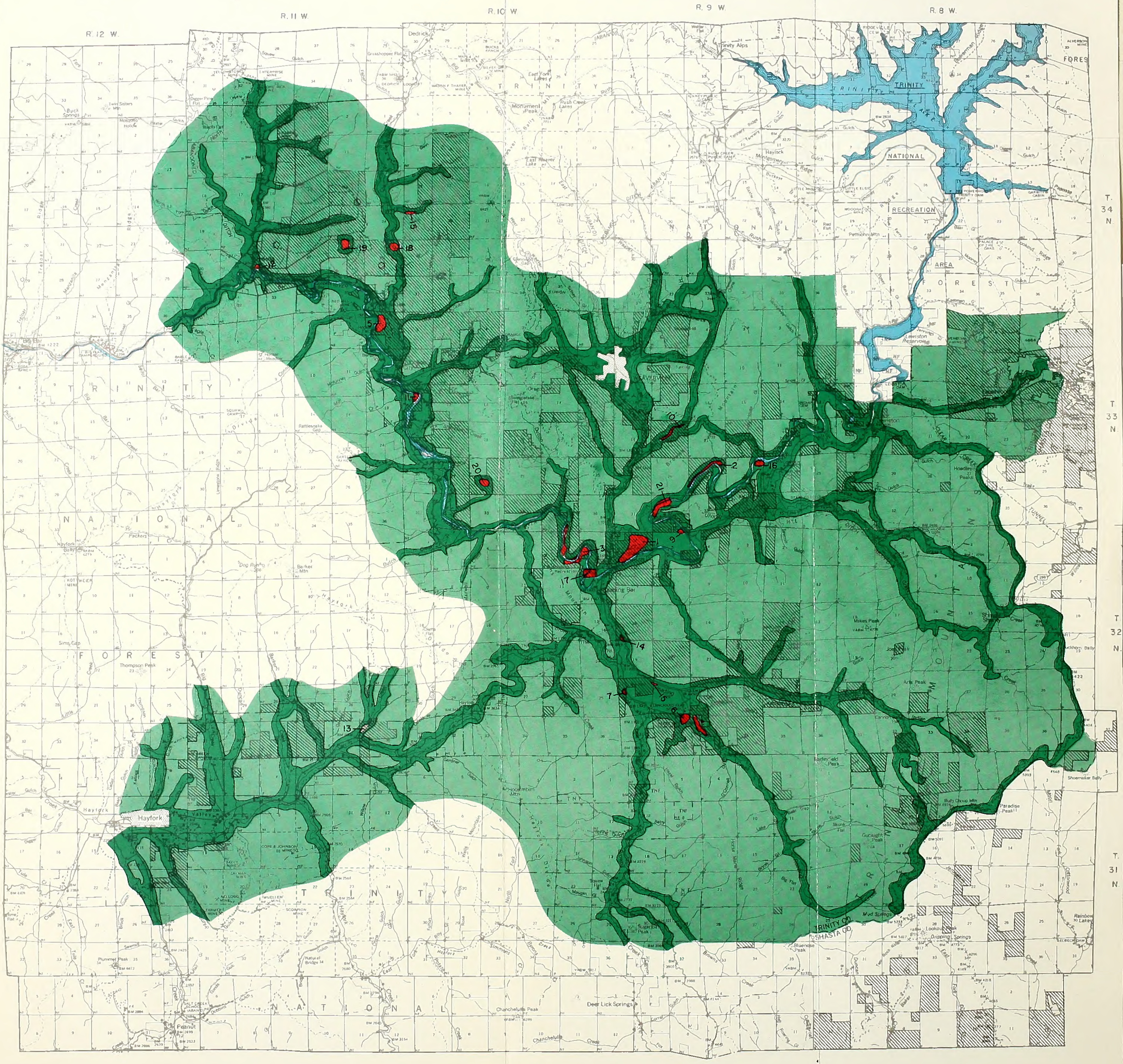
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
HELENA RESERVOIR
LOWER TRINITY DIVISION NORTH COAST PROJECT

CURRENT LAND USE

1/2" = 1 MILE

MOUNT DIABLO MERIDIAN

MAP 4



▨ PUBLIC DOMAIN

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HELENA RESERVOIR
LOWER TRINITY DIVISION NORTH COAST PROJECT

B.L.M. RECREATION WITHOUT RESERVOIR

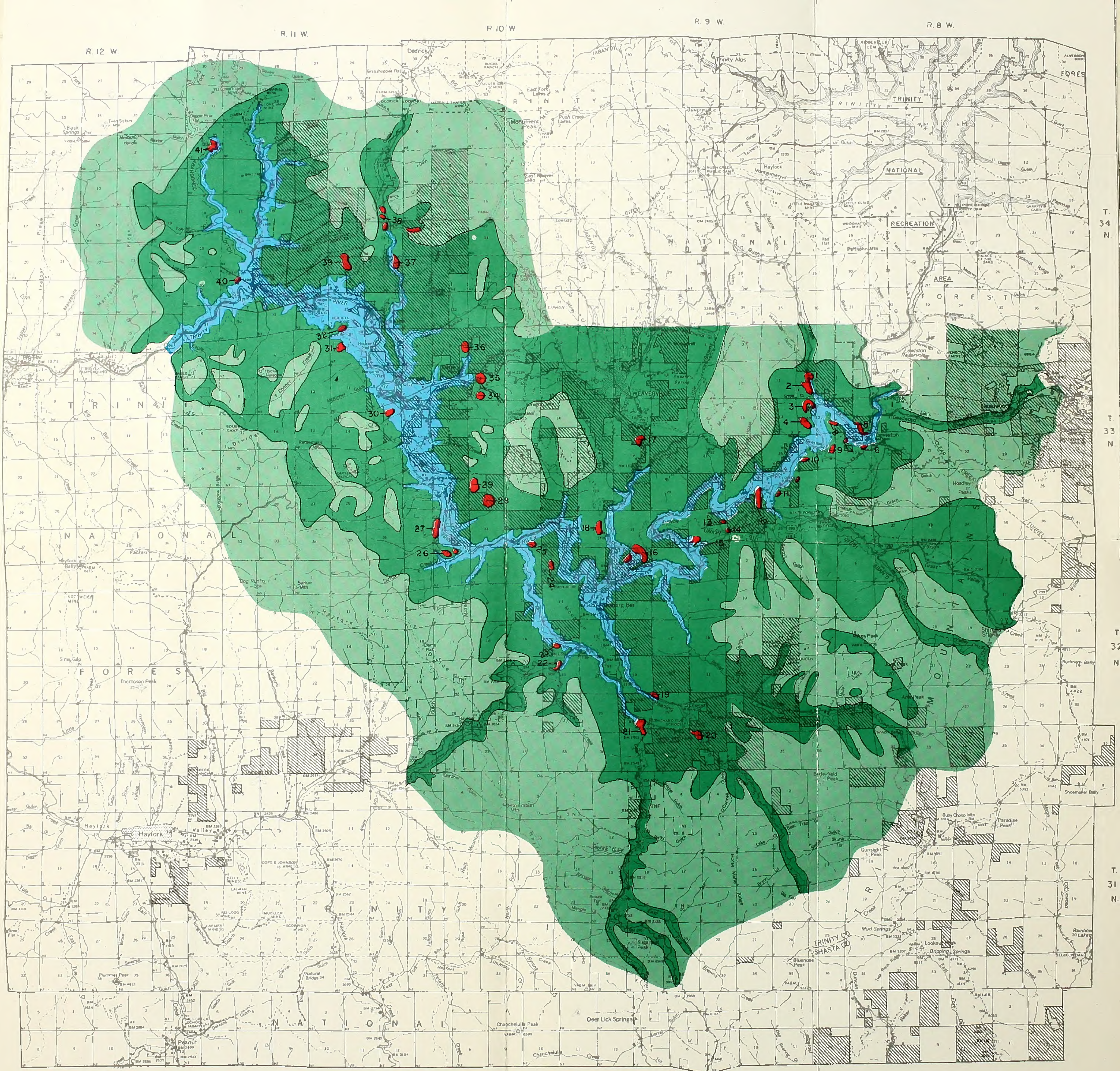
LEGEND

- 🟥 RECREATION DEVELOPMENT AREAS (exclusive recreation)
- 🟩 BUFFER ZONES (special management considerations)
- 🟩 OPEN SPACE (good management required)
- ○ OVERLOOKS
- ~ TRAILS (planned)

1/2" = 1 MILE

MOUNT DIABLO MERIDIAN

MAP 5



▨ PUBLIC DOMAIN

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HELENA RESERVOIR
LOWER TRINITY DIVISION NORTH COAST PROJECT

LEGEND

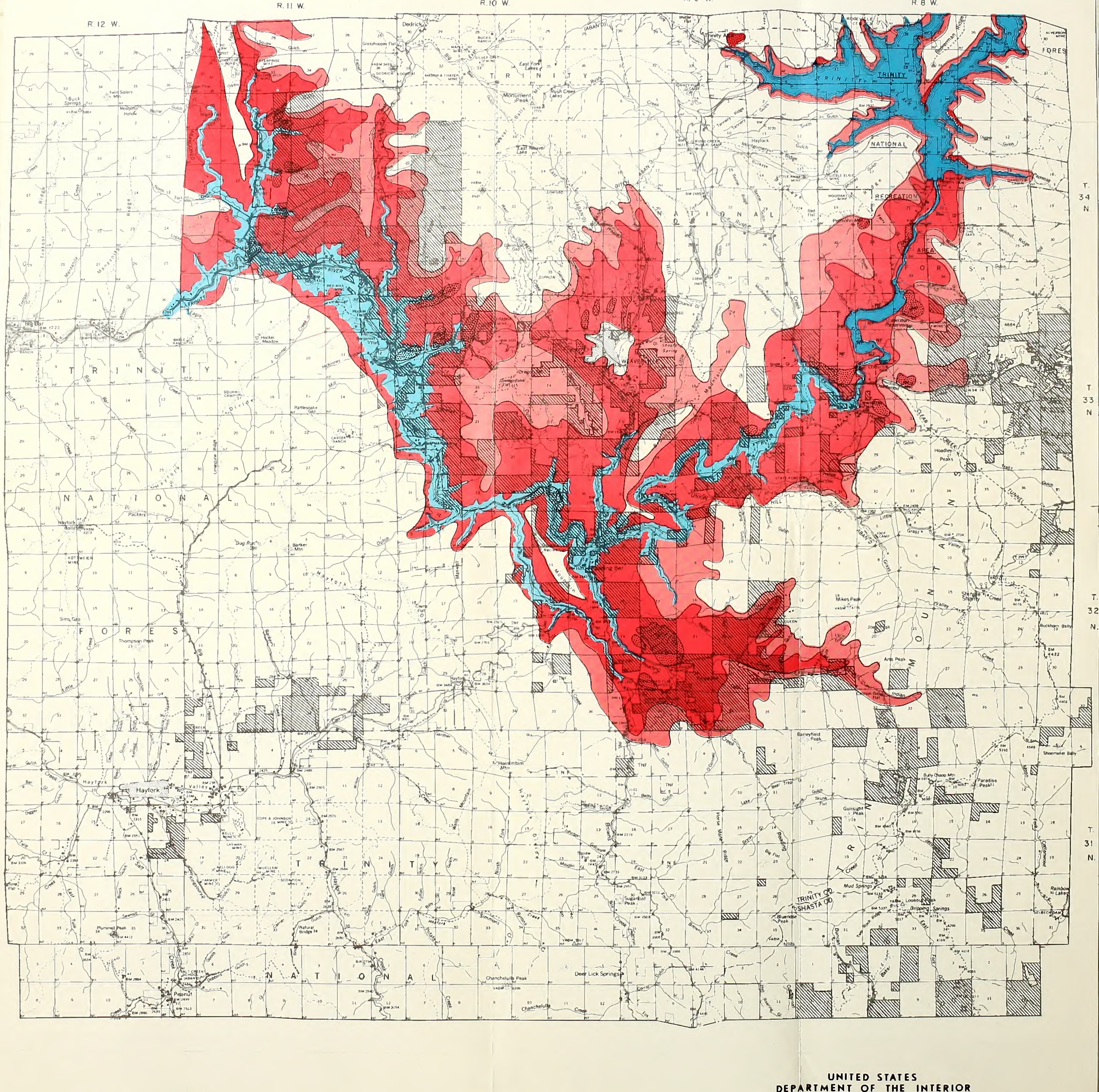
🟥 RECREATION DEVELOPMENT
🟩 BUFFER ZONE - SPECIAL TREATMENT
🟩 OPEN SPACE

PROPOSED RECREATION WITH RESERVOIR

1/2" = 1 MILE

MOUNT DIABLO MERIDIAN

MAP 6



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
HELENA RESERVOIR
LOWER TRINITY DIVISION NORTH COAST PROJECT

WEAVERVILLE DEER HERD WINTER RANGE

▨ PUBLIC DOMAIN

LEGEND

GENERAL WINTER RANGE	🟥	110,000 ACRES
KEY WINTER RANGE	🟥	66,000 ACRES
DEER CONCENTRATION AREA	░	2,100 ACRES

1/2" = 1 MILE

MOUNT DIABLO MERIDIAN

MAP 7

Bureau of Land Management
Library
Bldg. 50, Denver Federal Center
Denver, CO 80225

Bureau of Land Management
Library
Denver Service Center

U.S. DEPARTMENT OF
BUREAU OF LAND

BORROWER'S

TD
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L462

Preliminary impact re
Lower Trinity River
project California.

DATE LOANED	BORROWER
1/8/85	U.S Bureau of Recl

(Continued on reverse)

Form